00081290

620.7
10/Twe
81290

THE
ASIATIC SOCIETY OF BOMBAY
TOWN HALL, BOMBAY-1.

Digitized with financial assistance from
Observer Research Foundation
on 17 May, 2019

Twenty Years of Technical Education in Bombay,

BEING

A RECORD

OF

TWENTY YEARS' PROGRESS

OF THE

Victoria Jubilee Technical Institute,

BOMBAY,

81290

BY

RAMKRISHNA M. CHONKAR,

Assistant Secretary,

Victoria Jubilee Technical Institute.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC

A-e-43

1887—1907.

For 1908-1913 See supplement at the end.

BOMBAY:
PRINTED AT THE TIMES PRESS.

1908.

620.7
Cho/Twe
81290

00081290

HER IMPERIAL MAJESTY THE LATE QUEEN-EMPRESS VICTORIA.

THE

Victoria Jubilee Technical Institute.

A Record of Twenty Years' Progress 1887—1907.

THE record of the progress of the Institute since its establishment twenty years ago may fitly commence with some reference to the efforts which culminated in that achievement. At the close of the memorable Viceroyalty of the Marquis of Ripon, the Citizens of Bombay raised a Fund to commemorate that Nobleman's beneficent administration. It was felt that the Memorial should be worthy alike of the great Viceroy and of the First City in India. Over a Lakh and a half of Rupees were collected: and in view of the great interest evinced by the retiring Viceroy in the Educational advancement of the country and the rapid growth of the industrial and commercial activities of Western India, the establishment in Bombay of an institution for Technical Education, was suggested as the most appropriate form the memorial could take. Accordingly the representatives of the Fund approached Sir James Fergusson, the then Governor of Bombay, in order to ascertain how far Government would be pleased to support the proposal. Sir James favoured the idea and it was understood that Government would, under certain conditions, grant the necessary land, and give

a suitable annual contribution towards the maintenance of the proposed institution. Before, however, the negotiations assumed a definite form, Sir James had been succeeded in the Governorship by Lord Reay: and the representatives of the Ripon Memorial had to re-open their proposals. As these involved a departure in the educational system of the Presidency, Lord Reay deemed it desirable to ascertain the views of the leading citizens on the subject. Accordingly an informal meeting of a few leading citizens was held, on the 3rd September 1885, under the presidency of the Governor, at the Secretariat, for the discussion of the question of the advancement of the educational and commercial prosperity of Western India. The meeting agreed that the most crying want of the Presidency was Technical Education. Diverse suggestions were made as to the lines on which it should be introduced and Lord Reay brought the discussion to a close by the promise that the public wants of technical education should have his best attention. The subject was as large as it was important and required most careful treatment both as regards the principles and the practical details of organisation. Hence further discussion being desirable, Lord Reay invited to Poona Mr. Nowrosjee N. Wadia, who was popularly looked upon as one of the Captains of Industry in Bombay, and on the 1st July 1886 His Excellency had a long interview with him on the subject. Two months later—on the 15th September 1886—Government issued a lengthy resolution reviewing the position as regards technical education in the Presidency, and embodying the result of their deliberations as to the lines on which it should be developed.

H. R. H. THE DUCHESS OF CONNAUGHT.
(Present at the Opening of the Institute.)

H. R. H. THE DUKE OF CONNAUGHT.
(Present at the Opening of the Institute.)

The whole subject was roughly divided into three branches according as the training related to (1) Agriculture, (2) Art Industries, and (3) Mechanical Industries. It was pointed out that the College of Science at Poona was the proper Central Institution for the teaching of scientific or higher agriculture and that local schools or classes should be established as feeders to the College under the management of Committees of influential agriculturists and others formed by Collectors and Educational Officers.

G. R. No. 3-Ed., 15th Sept. 1886.

Science teaching.

For the purposes of Art teaching the resolution directed that the Sir Jamsetjee Jeejeebhoy School of Art in Bombay should be the centre of Government efforts in this branch of technical education. It was pointed out that by bringing before the eyes of the people all that is best in painting and sculpture from the lowest decorations to its highest pictorial forms, Government will have best promoted Arts both useful and artistic. It was considered that the School of Arts should fulfil this mission for the Presidency, as it had been undertaken by the South Kensington Institution for the United Kingdom.

Art teaching.

The Resolution then proceeded to consider whether a Technological Institute should be established for the benefit of Mechanical Industries and putting aside the idea of such an Institute as being far in advance of the requirements of the times, and assuming that the question for immediate consideration was what instruction should be provided in the City of Bombay with a view to raise the scale of existing industries and prepare the way for useful developments, His

Mechanical Industries.

Excellency the Governor in Council thought that what was wanted was an Institution located in the district where the mills are and near the Railway Workshops, and that in this Institution instruction should be provided in such sciences as are necessary for the practical requirements of the Managers and Foremen on the one hand and of the skilled operatives and others on the other.

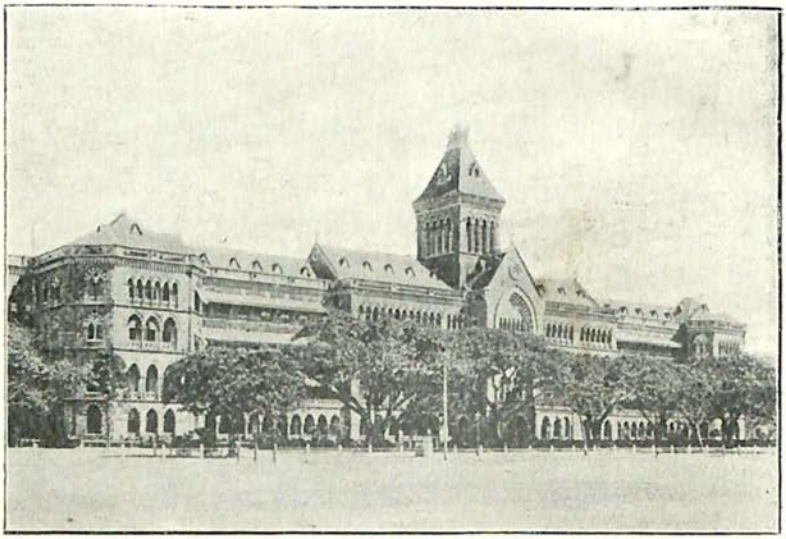
Suitable subjects of Instruction.

Physics, Practical Mechanics, Chemistry applied to Arts, knowledge of the sources of raw materials, nature and use of tools, dyeing and bleaching, drawing plans and designs, theory of colour and beauty, the manipulation of cotton, jute, wool and silk, their process of manufacture and the art of finishing the same in woven fabrics, the design and construction of steam and other engines,—these were named as the subjects suitable for instruction. It was not considered necessary or desirable that all these should be undertaken at the start, but it was suggested that they may be gradually introduced as opportunities presented themselves, the object of the proposed Institution being, it was remarked, to give the students a grasp of scientific facts which they could readily apply to any trade. The aim was not to put into the market the article of any industry, but to turn out the workmen fit to be employed in any industry.

The aim and object to be desired in the new Institution.

The Resolution then went on to suggest the formation of an Association in the City of Bombay for the promotion of technical education, and intimated that Government would recognise and assist it to the utmost possible extent on the principles laid down.

Government recognition.



THE SECRETARIAT, BOMBAY

Reference was next made to a suggestion concerning the holding of an Industrial Exhibition under the patronage of Government before the new Institution was opened, as it was thought that the greater portion of the machinists and furnishers who supply the various mills and factories could be induced to send machines and other articles to the Exhibition with a view to eventually presenting the same to the new Institution.

Industrial Exhibition.

The subject of special industrial schools was dismissed as one for the consideration of particular localities and trades, and the Resolution concluded with an appeal for public support in the following significant words :—

Special Industrial Schools.

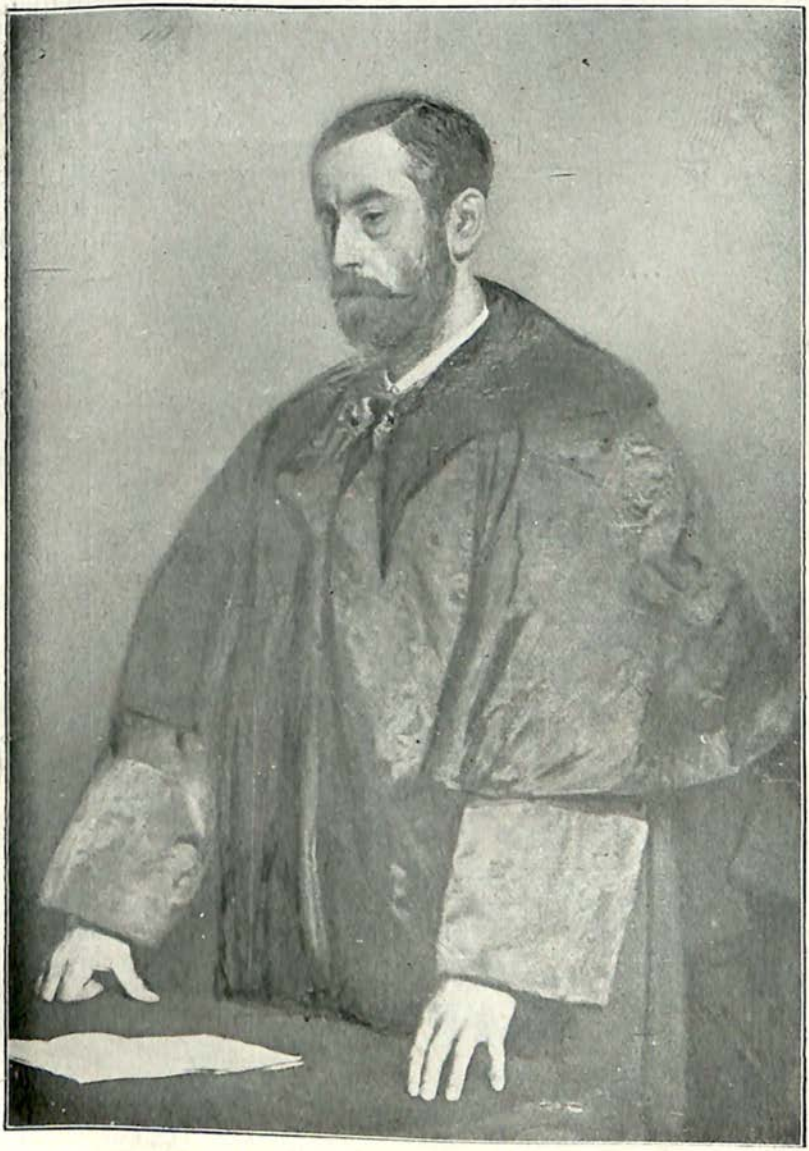
"It is universally felt that new channels should be opened not to repress the intelligence of the country so largely developed by means of the education imparted during the last thirty years, but to dissuade it from overstocking one field, by providing other appropriate ground. Various grades of technical education forming ends in themselves for various classes of the community must all tend to develop the material resources of the country and to improve the general condition of the people. His Excellency the Governor in Council wishes to make a cautious and small beginning, out of which gradually a more complete fabric may be evolved by the process of natural evolution, to utilize existing resources to labour in a few and selected fields, to work out the scheme almost entirely through native agency, to im-

Appeal for co-operation.

prove such native agency by giving them opportunities of completing their education in Europe and of witnessing the industrial, agricultural, mechanical, artistic and mercantile development of the Western World. The scheme is not academic, does not include legal and medical education, because it is not intended for the academic but for the producing classes. Its main object is to enhance the well-being of the people at large by giving increased employment to labour and capital in the Presidency and by cementing the harmonious relations which should exist between both."

Jubilee celebration.

As has been stated this important resolution was issued on the 15th September 1886. About this time numerous movements were set on foot throughout the country with a view to suitably commemorate the then forthcoming Jubilee of the glorious reign of Her Majesty the late Queen Empress Victoria whose many subjects of diverse races, religions and creeds heartily reciprocated the love which the Great and Good Queen bore them. In Bombay a Royal Jubilee Fund was started and the Municipal Corporation as representing the people of the City, set apart a sum of Rs. 80,000 for a permanent memorial of the auspicious event. They invited Government to associate themselves with the movement. With characteristic sympathy with the feelings of the people and wise regard for their permanent welfare, Lord Reay at once responded to the invitation with the proposal for the establishment of a Victoria Jubilee Technical Institute, promising at the same time an annual Government grant of Rs. 25,000 for the



H. E. THE RT. HON. LORD REAY, G.C.S.I., G.C.I.E.,
GOVERNOR OF BOMBAY, 1885-1890.
(From the Painting in the Institute.)

maintenance of the proposed Institution. In a letter addressed to the Municipal Commissioner, His Lordship wrote:—

"Government have considered carefully how they could best associate themselves with the movement set on foot by the Municipality to commemorate the Jubilee of Her Majesty's auspicious reign. They have come to the conclusion that the most pressing want of the people of this Presidency and of this City is an Institution which will promote the efficiency and skill of the artisan. Government believe that a Victoria Jubilee Technical Institute, managed by a Board composed of three representatives of Government, two of the Municipal Council, one of the Port Trust, one of the Chamber of Commerce, one of the Sassoon Mechanic's Institute and one of the Jamsetjee Trustees will best meet the objects and needs of the hour. His Excellency the Governor in Council is prepared to give a grant of Rs. 25,000 annually on approval of the programme and the personnel of teachers, and on such conditions as may further be deemed essential. To make an immediate beginning possible and to show his personal interest, I am prepared under certain conditions to lend the greater part of Parel Government House to the new Institution. Government trust that the co-operation of all classes of the community in the various parts of the Presidency will eventually

Jubilee Memorial.

Government grant.

lead to the extension of the movement which cannot however be started in many places on account of the scanty resources at the disposal of Government."

Municipal grant.

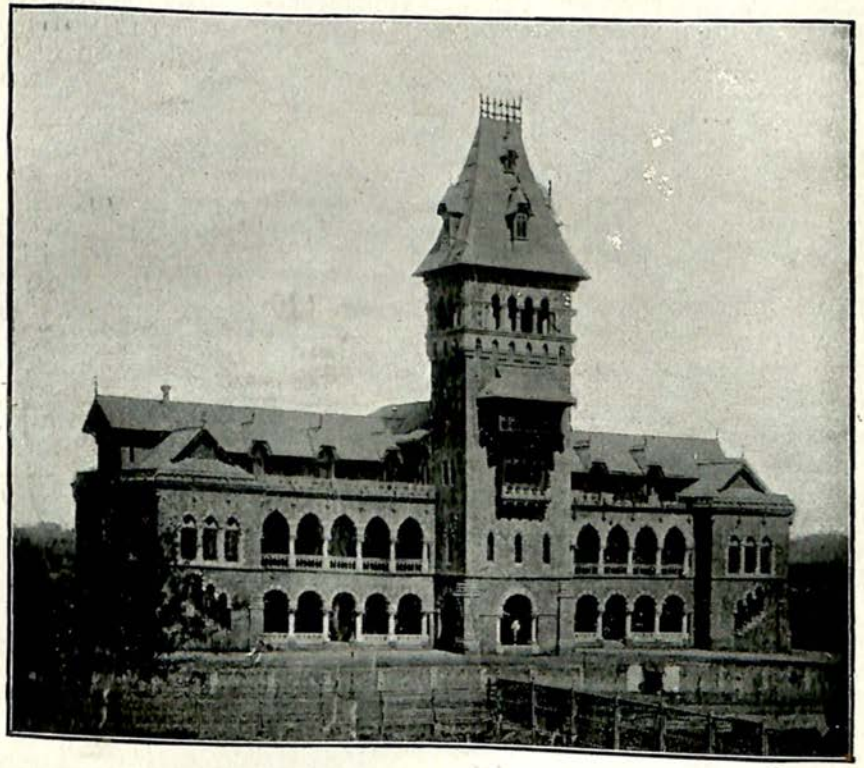
The Municipal Corporation accepted the suggestion and in addition to the lump sum of Rs. 80,000, voted an annual grant of Rs. 5,000 for the maintenance of the proposed institution.

Millowners' donation.

While the subject was before the Corporation Government had invited the Millowners' Association to identify themselves with the scheme, and the Committee of the Association readily responded to the invitation by the promise of an annual donation of Rs. 2,000 towards the funds of the proposed Institution.

Board of Management.

Obviously the next step for the furtherance of the object in view was the formation of a Committee of Representatives. Government nominated Col. J. H. White, R.E., Mr. (afterwards Sir) George Cotton and Mr. Nowrosjee N. Wadia, A.M.I.C.E., as their representatives, and the other nominating bodies were informed that they were not restricted to select Members from amongst their own number, as the object was to have on the Committee gentlemen whose qualifications rendered them most fitted to further the end in view. The first meeting of the Board, as the Committee was styled, was called at the Secretariat for Saturday, the 19th March 1887, and the Government promised to invite the management of the Sind College of Arts to allow Dr. R. M. Walmsley, the Principal of the College, to attend the meeting in order to give the Board the benefit of his recent experience in England.



MAIN BUILDING.
Victoria Jubilee Technical Institute.

The Hon. Mr. Frank Forbes Adam was unanimously elected Chairman. Dr. Walmsley then placed his views before the meeting, and after a long discussion it was decided that he should prepare a scheme on the lines indicated at the meeting, taking Mechanical Engineering as the first and Weaving as the second branch, and that he should submit estimates to a meeting of the Board to be held on Thursday, the 24th March 1887. Dr. Walmsley's rough draft of the scheme was accordingly placed before the Board, who, after a long discussion, allowed it to stand over, as there was no indication of the extent of the funds which would be available for a start. At this meeting Mr. Wadia was invited to undertake the duties of Honorary Secretary.

The Hon. Mr. F. F. Adam elected Chairman.

Dr. Walmsley's rough scheme.

Mr. Wadia elected Hon. Secretary.

The combined efforts of the Chairman and the Honorary Secretary were now directed towards securing the funds needful for a satisfactory beginning. Within a few weeks they were able to secure to the Institute the transfer of the balance of the Royal Jubilee Fund, amounting to Rs. 35,381-6-6, and to announce that the amounts standing to the credit of Sir Jamsetjee Jeejeebhoy 2nd Bart. Memorial Fund and the Ripon Memorial Fund would be made over to the Board on certain conditions. The subscribers of the Sir Jamsetjee Fund had agreed to transfer the balance of Rs. 45,951-4-6 on condition that it shall be expended on a separate detached building in connection with the Institute, the building being named after the late Sir Jamsetjee Jeejeebhoy, Second Baronet, and

Transfer of the Royal Jubilee Fund, The Sir J. J. Memorial Fund and the Ripon Memorial Fund.

the subscribers to the Fund being allowed to nominate one Representative on the Board of Management of the Institute. The conditions proposed by the Trustees of the Ripon Memorial Fund were :—that the money amounting to over Rs. 1,50,000 shall be used in founding in connection with the Institute a school to be called the Ripon Textile School; that the Committee of the Fund shall be allowed to elect five representatives on the Board; that such representatives shall have the right of electing successors, and that in the event of the Institute failing to continue the work of technical education, Government undertake to maintain and continue the Textile School. The conditions were accepted and the two Funds were eventually transferred to the Institute early in the following year (1888). Mr. Dossabhoy Framjee, C.S.I., was nominated by the Committee of the Sir Jamsetjee Fund as their representative on the Board. The choice of the Committee of the Ripon Fund fell on the Hon. Mr. (afterwards Justice) K. T. Telang, The Hon. Mr. (now Sir) P. M. Mehta (K.C.I.E.), Mr. (afterwards the Hon. Mr. Justice) Budrudin Tyabjee, Mr. Sorabjee Framjee Patel and Mr. (now Sir) Hurkisondas Narotamdas.

Representative of the Sir J. J. Memorial.

The Ripon Memorial Committee.

While the negotiations with the Committees of the two Funds were in progress, the Board had also under consideration the question of a suitable site for the Institute. Their efforts received an immense stimulus by the munificent offer of the Hon. Sir Dinshaw Manockjee Petit, Kt., which was made about the end of the year 1887, to convey to Government his

Question of site. Sir Dinshaw's munificent gift.

THE LATE SIR DINSHAW MANOCKJI PETIT (FIRST) BART.
DONOR OF THE BUILDINGS AND PREMISES.
(From the Painting in the Institute.)

property known as the Hydraulic Press in exchange for the Elphinstone College building and premises, which he would then convey to Government as a gift for the purposes of the Technical Institute. The value of the property was estimated at Rs. 3,00,000. The Governor in Council accepted the offer with great gratification and ordered that the Elphinstone College buildings and grounds should be placed at the disposal of the Board of the Institute by the end of April next following (1888).

Legal position of the Board.

It was now time that the legal position of the Board and the relation of the Institute to Government should be reduced to writing and rules prepared for the administration of the Institute. The Board, hence, appointed a small Committee to draw up a constitution and the rules and regulations which should govern the management of the Institute. The Committee consisted of :—

> The Chairman, the Hon. Mr. Frank Forbes Adam, Major W. S. Bisset, R.E., the Hon. Mr. K. T. Telang, C.I.E., the Hon. Mr. P. M. Mehta, the Hon. Mr. Budrudin Tyabjee and the Honorary Secretary, Mr. Nowrosjee N. Wadia, A.M.I.C.E., M.I.M.E.

Society registered 27th November 1888.

They had the benefit of the experience of Mr. K. M. Chatfield, M.A., the Director of Public Instruction, and the rules and regulations, as drawn up by the Committee, were duly approved by Government and were finally adopted and registered along with the Memorandum of Association under Act XXI of 1860 (The Indian Societies' Act) on the 27th November 1888.

Object of the Society.

The object of the Association was declared to be "To impart instruction to persons of either sex in the principles of Science and Art and their application to industrial and other purposes by—

(1) the establishment of an institution in Bombay for the instruction of apprentices, workmen, foremen, managers and for training suitable technical teachers for the whole of the Presidency ;

(2) the establishment as funds permit of technical schools at other places than Bombay and the grant of assistance to such schools as may be affiliated to the Institute throughout the Presidency ;

(3) the holding of examinations in Technology in any manner that may appear practical and the granting of certificates of competency to those who pass the prescribed tests."

Principal provisions of the Rules and Regulations.

By the rules and regulations the duty of carrying on the management of the Institute was vested in a Board of Trustees consisting of five Members and a Chairman to be appointed by Government, five Members to be elected by the Committee of the Ripon Memorial Fund, three Members to be appointed by the Bombay Municipality so long as they shall continue to contribute annually a sum of not less than Rs. 5,000 per annum for the working expenses of the Institute, one Member to be elected by the Trustees of the Sir Jamsetjee Jeejeebhoy Second Baronet Memorial Fund and one Member to be appointed by the Bombay Millowners' Association so long as they shall contribute not less than

Constitution.

SIR FRANK FORBES ADAM, KT., C.I.E.,
FIRST CHAIRMAN OF THE BOARD, 1887-1890.
(From the Painting in the Institute.)

Rs. 2,000 per annum for the maintenance of the Institute. The Board was given power to add to their number as Life Members (*a*) such persons as shall subscribe for the purpose of the Institute a sum of not less than Rs. 10,000 and (*b*) the representatives of such corporate bodies as shall subscribe for the purposes of the Institute a sum of not less than Rs. 50,000. They were further empowered to add to their number as Members the representatives of such corporate bodies as shall subscribe for the purposes of the Institute a sum of not less than Rs. 2,000 per annum so long as such subscription shall be continued.

The representatives of the Ripon Memorial Fund were to hold office for life and were to have the right of electing or filling up vacancies by co-optation. The Government nominees and the Chairman were to hold office during the pleasure of Government. Absence without leave from the Meetings of the Board for a period of twelve consecutive months was to entail on the absenting Trustee loss of his seat on the Board. The relation of the Trustees to the Government was definitely settled by the following provisions :—

Relation with Government.

No sale of immoveable property was to be made without the previous sanction of Government. The annual estimate of receipts and disbursements was to be subject to the approval of Government. The Books and Accounts of the Board were to be open at all times to the inspection of Government. The Institute was to be bound to furnish such statistical or other information as may be required by the Educational Depart-

ment and the Institute was to conform to the rules of the Grant-in-aid Code for Colleges as may be declared by Government from time to time to be applicable. The scheme of examinations was to be subject to the approval of the Educational Department, and the certificates of qualification as teachers were to be countersigned by the Director of Public Instruction. Finally it was provided that no addition to or alteration in the Rules and Regulations was to be made without the sanction of Government.

Appointment of Principal.

Simultaneously with the preparation of the Rules and Regulations the Board took into consideration the question of the appointment of the Principal. The negotiations with Dr. Walmsley had fallen through, and after a long discussion at the meeting of the Board held on the 26th April 1888, the appointment of Mr. J. P. Phythian as Principal at a salary of Rs. 800 per mensem was agreed to, and a small Committee consisting of the Chairman, Major-General J. H. White, R.E., Dr. Thomas Blaney, George Cotton, Esq., and the Honorary Secretary was appointed to put the position of the Board in all its bearings clearly before the Principal and with him to draw up a scheme of operations.

Mr. J. P. Phythian, C. E.

Mr. Phythian was a Civil Engineer of the Glasgow University, and at the time of his appointment held the position of the Head Master of the Oldham Technical School, where he gave lectures on Theoretical and Applied Mechanics, Machine Construction and Drawing, Steam and the Steam Engines, Physics as applied to Engineering, Chemistry, Electricity

THE LATE HON. MR. NOWROSJEE N. WADIA, C.I.E., A.M.I.C.E., M.I.M.E.,
First Hon. Secretary, 1887-1899.

and Magnetism and Metallurgy. It was understood that he had formerly been asked to take up the post that Dr. Walmsley held at the Sind College of Arts, but had refused. Mr. Phythian accepted the appointment and arrived in Bombay on the 11th June 1888, a few days after the Chairman and the Honorary Secretary had taken over charge of the buildings and premises. He was asked to draw up a preliminary scheme showing the direction in which it was advisable to carry on the early stages of the studies in the departments of Mechanical Engineering and Textile Manufacture to which the Board had decided to confine themselves at start. Mr. Phythian was not slow in responding to the call, and the 21st June 1888, *i.e.*, within ten days of his arrival, submitted a rough outline of his scheme.

His Preliminary Scheme.

In brief his suggestions were :—

That Science Classes being fundamental for the future work in the Ripon Textile School and the Technological Engineering branches, a commencement should be made by the opening of classes in a few important subjects, namely, Machine Drawing, Steam and Steam Engines, Theoretical and Applied Mechanics, Physics, embracing Sound, Light, Heat, Electricity and Magnetism. That in all these subjects Night Classes should be commenced in a few months after the Day Classes had been formed.

Science Classes.

That Day Students should be admitted from applicants who had passed the Vth English Standard of the Educational Department, or persons seeking admission should have attained the age of 14

Admissions.

years and should be required to pass an entrance examination, satisfying the Principal that they were qualified to attend the Institute.

Fees.

That the fee for Day Students should be Rs. 3 per month and that for Evening Students Re. 1 per mensem.

Free Studentships.

That free Day Teaching Scholarships might be given to one or two students in Mechanics and Physics, on the understanding that the scholars should afterwards give assistance without salary for two years in the Day or Evening Classes as required.

That a preliminary grant be made of Rs. 5,000 in order to arrange the building with proper fittings, etc., for a small beginning.

As regards the suitability of the buildings, Mr. Phythian observed as follows :—

Suitability of buildings.

"The imposing effect produced by the external features of the building is amply sustained by the admirable internal arrangements which are peculiarly suited for the purpose of technical education. The handsome elevation and general plan of the building will compare favourably with the Technical Colleges of Great Britain and the accommodation provided will suffice for many years for a great number of students. The separate buildings lately used as a Gymnasium is a very valuable addition to the whole, and is most suitable for the reception and working of cotton machinery."

THE MUNICIPAL BUILDINGS.
(Where the Meetings of the Board are usually held.)

Mr. Wadia's additions to Mr. Phythian's Scheme.

The scheme which was entirely preliminary and necessarily incomplete, received considerable additions from the Honorary Secretary, who suggested that the cook-room and out-houses should be converted into the Mechanical Engineering Workshop, to be named after the late Sir Jamsetjee Jeejeebhoy, Bart. He also prepared plans and estimates for the conversion of the Gymnasium building to be used for the Ripon Textile School. Mr. Wadia drew up lists with prices of the machinery and tools required for the equipment of the two departments, and in consultation with the Principal worked out in detail the fittings and furniture for the Science Classes which, it was suggested, should be held in the main buildings.

The scheme thus enlarged was placed before the Committee appointed for its consideration along with a draft syllabus and time-table prepared by the Principal, and on the recommendation of the Committee the scheme received the sanction of the Board.

Equipment, etc.

The Honorary Secretary and the Principal were authorized to engage the staff of assistants necessary for a beginning in the Science Classes, and orders were wired for physical apparatus which was immediately sent out, and the work of fittings and furniture was entrusted to, and satisfactorily executed by, Mr. Jamsetjee Nowrosjee, Messrs. Alexander McKenzie and Messrs. John Roberts & Co. It was recognised that though an immediate start was to be made with the Science Classes, the work of practical instruction could not be delayed. Hence with all possible despatch specifications were

drawn up by the Honorary Secretary for the tools and machinery required for the Sir J. J. 2nd Baronet School of Mechanical Engineering and forwarded to various machine makers in England, who sent in their tenders. After considerable thought the necessary tools were ordered from Sir Joseph Whitworth & Co. and Messrs. Smith & Coventry, and some small lathes were indented from Messrs. J. Butler & Co. The Honorary Secretary, who represented in India the well-known firm of Messrs. Platt Brothers of Oldham, Manufacturers of Cotton Machinery, was able to secure a present of a complete installation for the Ripon Textile School. It consists of machinery which will receive the cotton pod as it leaves the field, and bring it to a finished piece of cloth. The strapping, the bobbins, and the tin cans, and tin works required for this school were respectively supplied free of cost by Messrs. John Tulles & Sons, of Glasgow, Messrs. Wilson Brothers, of Todmorton, and Mr. R. Parkinson, of Blackburn, Manufacturers, whom Mr. Wadia represented in this country. Orders were also placed with Messrs. Richardson & Cruddas for the necessary plant for the Foundry and the Smithshop, as also for the necessary shafting in the Workshops. This firm showed its appreciation of, and interest in, the establishment of the Institute by charging only net cost for the work.

Remodelling of buildings.

The remodelling of the out-houses and the gymnasium for the purposes of the Sir J. J. Mechanical Engineering Workshops and the Ripon Textile School was also undertaken, and contract for the work was given to Fakirmahomed Ba-

THE HON. SIR PHEROZSHA M. MEHTA, K.C.I.E.
One of the Trustees, 1887 to date.

banbhoy, who finished it satisfactorily about the end of the year. Thus the necessary preliminaries having been arranged, the Board was asked to appoint a qualified master for the Ripon Textile School and a staff for the Science Classes. Mr. Hugh Monie, Jr., of Belfast, was selected for the important post of Head of the Textile School on a salary of Rs. 500 per mensem for a term of five years. The staff engaged for the Science Classes included Mr. C. H. Good, who was appointed Head Drawing Master, and Dr. H. K. Tavaria, B.Sc., L.M. & S., who was placed in charge of the Physics Classes and Laboratory. Applications for admission were now invited and Science Classes were informally opened on the 1st September 1888 with a full complement of 120 students. Many more desired admission, the applications for the programme numbering 700. Rather than disappoint so many applicants, the Board decided to take in 120 more and sanctioned extra fittings and furniture for the purpose. By the end of the month these were arranged, and on the 1st October 1888 a further complement of 120 students was admitted, making in all 240 day students. At the end of the next month Lord Reay honoured the new Institution by a visit, and in the following week, *i.e.*, on the 5th December 1888, the Chairman and Honorary Secretary of the Board had the privilege of welcoming the Viceroy Lord Lansdowne and showing him the arrangements made and in progress.

Head of the Textile School appointed.

Classes opened 1st September 1888.

The machines and appliances ordered out for the Mechanical Engineering Department had not then arrived.

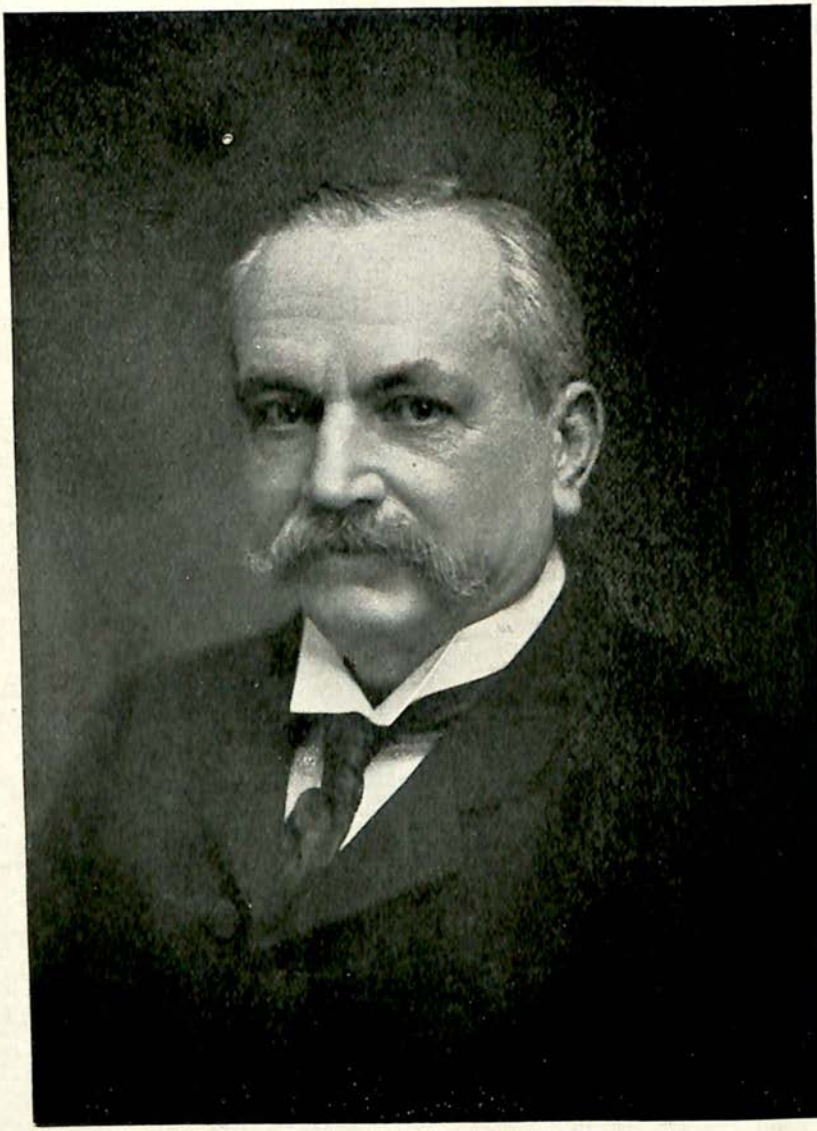
They commenced to come early in 1889, and the Board sanctioned the engagement of the necessary staff for the department including an Engineer on Rs. 450 per mensem and a Moulder on Rs. 150. Mr. S. Stephens and Mr. A. M. Coutts were appointed to these posts. Here, as in the Ripon Textile School, Mr. Wadia brought his special knowledge, skill and experience to the help of the staff in the erection of the machines and appliances in proper positions, and with the gratuitous help of his assistants, Mr. G. Ashby, Mr. Morris and Mr. Dadaji Hari, the preliminaries were arranged and the necessary preparations were made for the formal opening of the Institute by His Excellency the Governor Lord Reay in the presence of T. R. H. the Duke and Duchess of Connaught, on Wednesday, the 10th April 1889, which is regarded as a red letter day in the history not only of the Institute and Indian education, but that of the providential connection of India with England, for it was on that day that, as Lord Reay said, "there arose on Indian soil the first monument to the foresight of the late Prince Consort whose name must be for ever associated with the development of British Technical Education."

Engagement of Staff.

Ready for formal opening.

The proceedings opened with the formal handing over of the deed of gift by Sir Dinshaw Manockjee Petit to His Excellency. Mr. Nowrosjee N. Wadia, the Honorary Secretary, then read a short report of the rise and progress of the Institute. After the reading of the report, the Hon. F. Forbes Adam, the Chairman, requested His Excellency to declare the Victoria Jubilee Technical

Opening ceremony, 10th April 1889.



THE LATE SIR GEORGE COTTON, KT.
Chairman of the Institute, 1893-1899.

Institute, the Sir Jamsetjee Jeejeebhoy Second Baronet School of Mechanical Engineering and the Ripon Textile School open. In responding to the invitation Lord Reay made an eloquent speech, in the course of which he dwelt upon the need and importance of technical education and of combining sound scientific knowledge with thorough practical training, the limited scope and the elementary character of the instruction undertaken by the Institute, the wide field which existed for its development and extension, the difficulty of having to impart instruction in a foreign language and the lines on which the Institute was started and aimed to carry out its work. His Excellency also referred to the services rendered to the cause of technical education in the City by Sir Dinshaw Manockjee Petit, Sir Frank Forbes Adam, Mr. Nowrosjee N. Wadia, and to the financial support given by the Municipal Corporation, the Millowners' Association, the Committee of the Ripon Memorial Fund, the Trustees of the Sir J. J. Memorial Fund and other corporate bodies and individual benefactors. At the conclusion of the speech Lord Reay warned the students that "though well-trained and successful in their examinations at the Institute, they may, in getting into workshops, not realise all they had expected, and they must be prepared to serve an apprenticeship in some form or other, which would be rougher and more real than that which is served at school by any one."

Lord Reay's speech.

The Hon. F. Forbes Adam then asked to be allowed to take the opportunity of placing in a few words the financial position of the Board before the public with the object of showing not only

The financial position.

how they stood, but in the hope that an indication of the possibilities of expansion and development may lead those interested in the work to come forward with suitable and effective aid and support. He stated :—"Roughly, the Board has received on capital account, apart from Sir Dinshaw's gift of this splendid pile of buildings which is set down at Rs. 3 lakhs, a sum in money or money value of Rs. 3,35,000. Out of this have been expended on alterations to buildings, machinery, plant, furniture, fittings and apparatus Rs. 79,000, leaving a balance of Rs. 2,56,000. But it is estimated that before the equipment and appliances are complete, we must spend a further sum of Rs. 23,000. There will then remain Rs. 2,33,000 at the credit of capital account, which will annually yield interest and constitute a permanent endowment fund. Turning to revenue, we have received from the beginning till 31st March last, from all sources, Rs. 66,870, and we have spent on repairs, materials, taxes, insurance, salaries and sundries Rs. 28,870. We thus have Rs. 38,000 left. This must be separately invested, and should our income cover our expenses, it may remain intact, virtually forming an addition to the endowment fund. On the other hand should, in years to come, our income be unfortunately short of our expenditure, this money can be legitimately drawn upon to redress the balance. We have received from several generous gentlemen endowments to establish scholarships, free studentships and prizes. The sums amount to Rs. 33,500, and we have promises of Rs. 16,000 more, which will carry the total to Rs. 49,500." The Chairman went on to say : "the Board can proceed to teach the subjects in the prescribed course with the pros-

KHAN BAHADUR M. C. MURZBAN, C.I.E., F.R.I.B.A.
One of the Trustees, 1887 to date; Ag. Hon. Secretary, 1898-1899.

pect of maintaining a bare financial equilibrium. But if we are to enter on a wider field of technical instruction, such as chemistry, applied chemistry with its branches, dyeing, printing and bleaching or, say, electrical engineering, we must have more funds, and I earnestly hope that those who wish well to this movement will follow recent example, and enable the Board liberally to augment its endowments." The Chairman then thanked T. R. H. the Duke and Duchess of Connaught for their presence, and requested His Royal Highness to unveil the portrait of H. E. Lord Reay, which had been presented by Mr. Nowrosjee N. Wadia in order to commemorate for ever Lord Reay's connection with the Institute.

Paint i n g of Lord Reay unveiled by H.R.H the Duke of Connaught.

In unveiling the picture His Royal Highness made a short but impressive speech, and the proceedings terminated. Before leaving, however, the majority of the guests made a tour of inspection to the Institute.

Prominent among the events and incidents of the year after the opening of the Institute was a welcome visit with which His late Royal Highness Prince Albert Victor Duke of Clarence honoured the Institute on the 27th March 1890. The Board took the opportunity of requesting Her Excellency Lady Reay to kindly unveil the bust of Her Majesty Queen-Empress Victoria, which had been presented to the Institute in the preceding May by His Highness Maharaja Takhtsingjee of Bhownager. The function was performed with fitting pomp and ceremony in the presence of H. E. Lord Reay and a large and brilliant gathering of ladies and gentlemen. In addressing the assembly His Excellency

Bust of H. M. Queen Victoria unveiled by H.E. Lady Reay.

Lord Reay explained the aim of the founders of the Institute in the following memorable words :—

> "This Institute is meant to give to Her Majesty's Indian subjects those industrial advantages which their fellow subjects in England enjoy and which will tend to develop Indian industries and the exchange of Indian and English manufactures, stimulating the trade of both parts of the Empire and increasing the ties by which they are becoming more and more united daily."

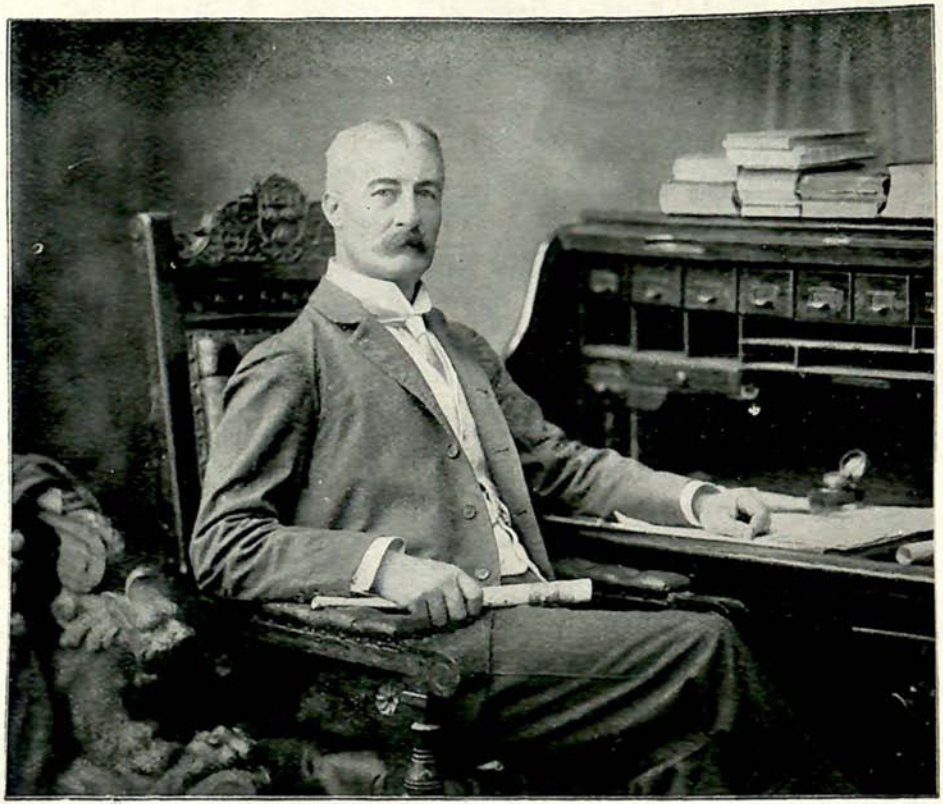
The bust is the work of the eminent sculptor Mr. Gelflowske. On either side of the pedestal there are medallions in marble of His Majesty King Emperor Edward VII (then His Royal Highness the Prince of Wales) and Her Majesty Queen-Empress Alexandra (then Her Royal Highness the Princess of Wales). The bust depicts Her Majesty in royal robes and is a replica of the one erected in the Kensington Town Hall.

Painting of Sir Dinshaw.

The present of the bust in May 1889 was followed by the gift of a full size oil painting of Sir Dinshaw Manockjee Petit, the munificent donor of the buildings of the Institute, from the Committee of the Fund raised to entertain the worthy Knight. It is a fine work of art and adorns the Library of the Institute, to which reference will be made hereafter.

Evening Classes opened, 17th June 1889.

At the opening of the Institute it was stated that arrangements were in progress for the opening of the Evening Classes for the instruction of workmen and others employed in the mills and factories of the City in



THE HON. MR. G. O. W. DUNN, M. INST. C. E.
Chairman of the Board, 1904 to date.

the sciences underlying the practice of their calling. These classes were accordingly opened on the 17th June 1889 with 118 students on the rolls. Here the instruction was limited to Drawing and Practical Work in the Physical Laboratory and lectures in Steam, Mechanics, Physics, the nature and use of machine tools and in Cotton Spinning and Weaving. The hours of attendance were from 7 to 9 p.m. daily, except Saturdays, Sundays and holidays. At the end of each Session there were examinations, and those who passed obtained certificates from the Board. The following table shows the numbers on the rolls for the different Sessions :—

Year ending 31st March	Hindu.	Parsee.	Mahomedan.	Christian.	Others.	Total.
1890	27	49	3	37	2	118
1891	8	9	1	39	2	69
1892	6	9	...	43	3	61
1893	9	13	...	60	4	86
1894	8	13	...	57	2	80
1895	1	7	1	44	...	53
1896	8	13	1	56	...	98
Total	... 67	113	6	336	13	535

Although the number on the rolls was large, the daily attendance was comparatively very small, *viz.*, between 22 and 39. This was not altogether a matter for surprise, considering that many of those who joined did not understand sufficient English to follow the lectures, which had of necessity to be given in English and that the hours of attendance followed, in the great majority of cases, a day's hard work without any considerable interval for meals and rest. These classes were eventually closed in 1897 and have not been re-opened since.

Day Classes. Routine of Work.

The principal work of the Institute was however in connection with its Day Classes which, as has been observed, were opened on the 1st September 1888. Here the hours of instruction were from 10 a.m. to 4-30 p.m., with ½ hour's interval for tiffin. The courses extended to three years. The subjects common to both departments —Mechanical Engineering and Textile Manufacture— comprised Drawing, Lectures in Steam, Mechanics and Physics and Practical Work in the Physical Laboratory. In addition the Engineering students received lectures on the nature and use of Machine Tools, and the Textile students were instructed in the theory of Cotton Spinning and Weaving. In the workshops the Engineering students had to pass through six sections— Pattern-making, Foundry, Smithy, Machine Tools, Lathes and Fitting, while the practical work in the Textile School comprised Ginning, Opening and Scutching, Carding and Drawing, Framing, Ring and Mule Spinning and Weaving.

Scheme of Examinations.

It was necessary to draw up a comprehensive scheme for the examination of the students in attendance and a small Committee was appointed for the purpose. The Committee had the benefit of the experience of the Hon. Mr. K. T. Telang, C.I.E., and Mr. K. M. Chatfield, M.A., Director of Public Instruction. The scheme drawn up by the Committee was approved by the Board and sanctioned by Government during the year (1889-90). There were to be outside Examiners for all practical examinations and for the science subjects of the final examinations. The

N. A. F. MOOS, Esq., B.Sc., F.R.S.E.
Honorary Secretary, 1900—1908.
One of the Trustees, 1900 to date.

rest were to be conducted by the Principal and the Masters of the Departments in the Institute acting as Examining Masters. No student was to be admitted to any examination unless he had attended 75 per cent. of the lectures and practices given during the year. The rules provided for the proper delivery of question papers, vigilant and silent supervision, distribution of papers and arrangement of test apparatus, tools, and machines, and among other things it was laid down—

(1) that the papers set are not in quantity and quality more than a well-prepared candidate could answer fully in the appointed time, and that there should be no violent change of standard in the question papers;

(2) that a single certificate will be given showing all progressive successes in Science and in Technology, the certificate to be signed by the Director of Public Instruction ; and

Full Technological Certificate.

(3) that to obtain a full Technological Certificate granted by the Education Department, a candidate must have completed a course of three Sessions in each of the prescribed Science subjects and in Technology. Candidate taking the Engineering course must obtain in each year three Science Certificates, of which two at least are in—

Machine Drawing,

Mechanics and Steam

and also four Practical Technological Certificates during the three Sessions. Candidates taking the

course of Cotton Manufacture must obtain in each year three Science Certificates, of which two at least are in—

Machine Drawing,
Mechanics and Cotton Manufacture Lectures
and also four Practical Technological Certificates.

During the three Sessions candidates must obtain 33⅓ per cent. of the full marks in each of the prescribed Science subjects and in the four departments of Technological subjects, also obtain 40 per cent. of the total marks obtainable in those subjects during the three years.

Those of the successful students who obtained 66⅔ per cent. of the total marks obtainable in those subjects will be placed in the First Class and those obtaining 50 per cent. in the Second Class and those who obtain 40 per cent. in the Pass Class.

Diplomas.

The Board authorised such of the students as passed in the First Class to designate themselves as L.M.E. (Licentiate of Mechanical Engineering), L.T.M. (Licentiate of Textile Manufacture).

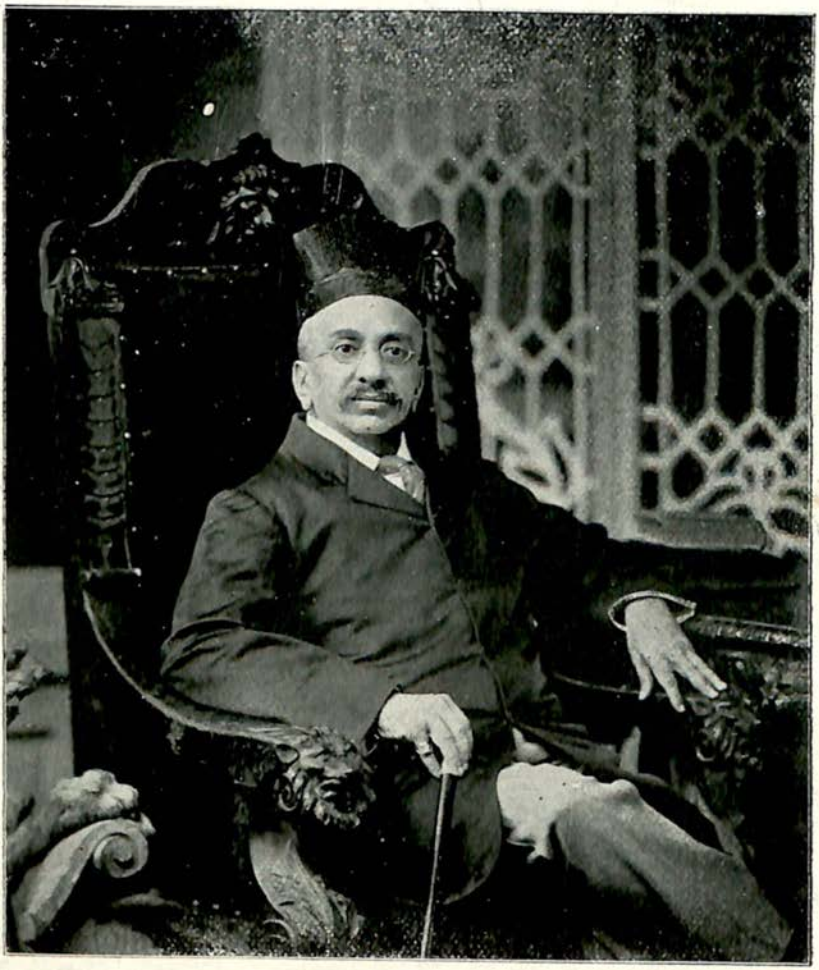
First Practical Examinations.

The first practical examinations were conducted in 1890 and the reports of the Examiners showed that a large majority of the students examined had done well.

1889-1890, Items of Interest.

Among the other noticeable items of the year (1889 to 1890) were—

1*st*—The transfer (July 1889) of the Nowrosjee Furdunjee Testimonial Fund, Rs. 11,000, for the award of scholarships and prizes on the results of the annual examinations.



BOMANJEE DINSHAW PETIT. Esq., J.P.
A Trustee, 1898 to date.

2nd—the present of a number of Drawing Plates (August 1889) from the Sir J. J. School of Arts,

3rd—the preparation of the Deed of Trust,

4th—the appointment of Mr. James Dunlop, M.I.M.E., as Mechanical Engineering Master, *vice* Mr. Stephens who resigned (October 1889), and of Mr. A. Hullah as Lecturer in Steam and Mechanics, *vice* Mr. A. K. Patel who resigned (November 1889), and

5th—the resignation of the Hon'ble Sir Frank Forbes Adam, Kt., C.I.E., of the office of Chairman of the Institute on his retirement from India (March 1890).

Sir Frank had unfailingly given a great portion of his valuable time and had spared no effort to promote the interests of the Institute. It was therefore but meet that the Board should pass a special resolution which they did at their meeting held on the 5th March 1890. The resolution ran as follows:—

"The members of the Board place on record the very great appreciation of the exceedingly valuable services rendered to the Institute from its very commencement by the Chairman, the Hon'ble Sir Frank Forbes Adam, Kt., C.I.E., and their extreme regret that the Institute is about to lose the benefit of its services."

A few days after a full-size oil painting of Sir Frank was presented by the Hon'ble Mr. Nowrosjee N. Wadia which will serve to permanently associate the name of the late Chairman with the Institute.

1890-91. The following year, 1890-91, was marked by steady work in the two departments already established. The only items of interest were:—

(1) the visit of a Commission (under the presidency of Mr. T. W. Holderness, Director of Land Records and Agriculture), appointed by His Honour the Lieut.-Governor, N.-W. Provinces and Oudh, to investigate the wants of those Provinces in respect of technical education and the best way of meeting those wants, and

(2) the question of the granting of certificates of competency as Engineers under the Bombay Boiler Act to successful students of the Institute. The Board had addressed Government in September 1888, requesting them to authorize the Institute to grant certificates of competency under the Act, and had been informed that there was some legal difficulty in the way of granting the authority to the Institute, and that the question may be brought up when the Act is revised or amended. The question was one of vital importance to the Institute, as without a certificate under the Act no one was permitted to take charge of engines and boilers in the Presidency. Considerable anxiety was prevalent among the students, as, under the rules in force framed under the Act, they might not be allowed even to appear for examination

Boiler Act Examinations.

THE HON. MR. JUSTICE N. G. CHANDAWARKER, B.A., LL.B.
A Trustee, 1901 to date.

without further service on engines and boilers.

The Board therefore requested the Honorary Secretary to write to Government for amendment of the rules, with a view to admit students of the Institute to examinations under the Act without further service on engines and boilers after they had left the Institute with a three years' course and a full Technological Certificate. As a result the modifications suggested were duly made and were notified in the *Government Gazette* in February 1891.

Soon after this Mr. Wadia proceeded to England (28th March 1891) on six months' leave, and Mr. George Cotton was requested to act as Hon. Secretary. Mr. Wadia resumed charge of his office in September 1891. The anxious moment was now approaching. The labour and hard work of the preceding four years were about to be tested by practical results. The efficiency of the instruction imparted was about to be examined from the standpoint of the requirements of the Boiler Act Examinations and by the test of the employments at which the students were aiming, or for which they were trained. Before the year was out, the first batch of students had completed their three years' courses and had been subjected to final examination, conducted by a Board of Examiners consisting of gentlemen unconnected with the Institute. Their reports showed that the majority of the students examined had done well; 74 passed in the First Class and gained the diploma of Licentiate of Mechanical Engineering,

1891-92.

First Batch Students, 1891.

17 gained the full Technological Certificate in Mechanical Engineering of the Second Class, 15 students obtained the diploma of Licentiate of Textile Manufacture and 3 gained the full Technological Certificate in Textile Manufacture of the Second Class. 16 scholarships and prizes and one Gold Medal were awarded on the results of the three-years' examinations. The presentation of the awards was made at the request of the Board by His Excellency Lord Harris, G.C.I.E., Governor of Bombay, on Thursday, the 28th January 1892, at 4-30 p.m., in the presence of Her Excellency Lady Harris and a large gathering of ladies and gentlemen. In the course of his address, delivered on the occasion, His Excellency observed: "We believe from the reports of the Examiners and from the care we know their instructors have given them that these young men who have crossed the platform to-day are worthy of employment. Now the anxious question is, is that employment waiting for them, and if it is (we hope and we may fairly hope it is), we may be certain that the demand for education of this kind will increase. If we look a little ahead of the present day, if we may hope, and I think it is only reasonable we should hope, that some of these young men, who are passing through the Deccan College of Science and the Technical Institute here, will raise themselves to the higher walks of their profession, it must mean in time that they will absorb those appointments about factories in connection with manufactures, about railways, and generally in connection with manual work and the management of manual work which up to now have been largely held by Europeans.

SIR BHALCHANDRA KRISHNA, KT.
A Trustee, 1902 to date.

I see no reason at all, if they are capable of doing as well as Europeans, why we should grudge them the advantage which has been given them."

March 1892. Boiler Act Examination.

These were liberal views indeed, but rather unfortunately for the Institute they were not, and in the nature of things could not be, easily acceptable to the class whose displacement they indicated. Whether in consequence of the large influence exercised by this powerful class or not, at the examinations under the Boiler Act held in March following (1892) all the 42 candidates from the Institute who presented themselves were declared failed. As far as could be learnt the majority had passed the written examinations (which were held on the 9th and 11th March), but every candidate had been declared failed in the *viva voce*, not, it was alleged, on the questions set but on the ground of not having worked in a mill. The majority were asked—Have you worked in a Mill? and it was reasonable to believe that there must have been a misconception on the part of the Examiners as to the concession made by Government by the modifications in the rules under the Act, whereby successful students of the Institute had been permitted to appear at the examinations without further service in any factory or workshop or mill. The Board protested and the Collector was instructed to make enquiries into the cause of the failure and pending such enquiry to order that the students' answer papers be not destroyed. The Collector promised to bring the matter to the notice of Government on the return of the papers from the Examiners. The Examiners stated to the Collector that the candidates had failed in *viva voce* through deficiency of knowledge in

case of accidents and breakdowns and on other points of practical experience in the management of boilers. The matter was again placed before the Board who authorised the Honorary Secretary to reopen the consideration of the Board's proposal made in October 1888 and accepted by Government, that the examinations under the Act be held by the Institute in its own name and the Institute be empowered to grant certificates on the results of such examinations, Government appointing one of the two examiners. The Chairman also approached His Excellency the Governor who considered a separate Board of Examiners undesirable, but thought it would be better to strengthen the present Board. It was eventually agreed to await the result of the changes proposed in the constitution of the Board of Examiners before addressing Government further on the subject.

In the meantime the Honorary Secretary had several consultations with the Principal with a view to effect such improvements in the courses of instruction and kindred matters as may be possible. A collection of articles of trade and manufacture was started which, it was hoped, would materially help the students in their studies and would bring the Institute prominently before manufacturers and others interested in the development of the industries of the country. Letters were addressed to various manufacturers with a view to getting their assistance and some responded by presenting to the Institute a few articles. A defects collection was also started illustrative of corrosion and other actions to which materials are subject and showing also what defects in manufacture or in material

Collection of Trade articles and Defects collection.

SIR HURKISONDAS NAROTAMDAS, Kt.
One of the Trustees, 1887 to date.

had contributed to failure. The object of this collection was to impress upon the students where and how materials and machinery gave way through the defects either of construction or of material.

Library.

As another auxiliary to the instruction imparted in the class rooms a Library was established towards which presents of books were received from various publishers. The Library now contains over 1,100 volumes on subjects connected with trade, manufacture and science. It is regularly supplied with 32 Weeklies, 2 Fortnightlies, 16 Monthlies, and 2 Quarterlies relating to manufacturing, mechanical and science subjects. It is kept open at stated hours daily and, with the permission of the Principal, students are allowed to take books out of the Library for home reading.

Longer hours.

The programme of class work and time-table were also revised with the view of giving a larger amount of time to practice in the workshop without curtailing the time devoted to the lectures. The second term was lengthened by about three weeks by shortening the October vacation from 7 to 4 weeks.

Higher Preliminary Education.

The standard of admission was raised from the V to the VI Standard. A higher preliminary education was considered desirable, but it was feared that the change would be a jump which might not be to the interest of the Institute just then.

The usefulness of the instruction was thus enhanced, but the effect produced by the wholesale failure of the 42 candidates at the Boiler Act Examinations in

March 1892, of which mention has been made previously, could not pass away in so short a time. To add to the difficulties of the Institute-trained students in the matter of employment, it was proposed by the authorities, who had the framing of the rules for the examinations under the Boiler Act, to withdraw the permission granted to the students to sit for the Second Class Certificate Examinations altogether and to restrict their entry to the 3rd Class Certificate tests, thus creating in the minds of the employers, who, it may be stated, did not in many cases fully appreciate the advantages of technically-trained operatives and foremen, a doubt as to the practical value of the Institute-trained students. The subject was taken up by some of the journals and the Institute came in for some adverse criticism. There was a falling off in the numbers attending and seeking admission to the Institute. A public reply from the Board was obviously necessary in the circumstances to allay the fears raised in the public mind as regards the success of the Institute, and this was furnished by the speech of the Chairman of the Institute delivered on the 2nd March 1894 on the occasion of the Public Presentation of Awards to the successful students by H. E. the Governor, Lord Harris. Mr. (afterwards Sir George) Cotton who had succeeded Colonel Bisset as Chairman about two months previous, in the course of his opening remarks observed: " The Board having been anxious to learn what became of students who had passed through the Institute made careful enquiry regarding the first two batches sent

Boiler Act again.

Distribution of Awards, 24th March 1894.

DINSHAW EDULJEE WACHA, Esq., J. P.
A Trustee, 1900 to date.
Provisional Hon. secretary, 1908.

out, and I am pleased in being able to state that of the 138 students concerned 87 have been traced and found employed on salaries ranging from Rs. 25 to 150 per month. I have no doubt that most of the remaining 51, of whom no information is available, have also found remunerative employment. I think the fact that 63 per cent. of the students who have passed out of the Institute are employed in the branches for which they were instructed shows how very groundless are the complaints frequently heard that the students who have passed through the Institute do not find the training and instruction it gives of any benefit to them in obtaining employment. I would also point out that from a statement kindly placed at my disposal by the Senior Inspector of Boilers we observe that during the year 1893-1894, 49 out of 59 students who presented themselves passed successfully the Second Class Engineers' Examination (under the Boiler Act). This gives a percentage of 83, while of the 196 candidates who had not the advantage of being trained in the Institute only 81 passed, say a percentage of 41. These results, I submit, show that the Institute qualifies its students for employment, and as the growth of small factories in India is annually increasing we may work on feeling tolerably comfortable that for years to come our supply of thoroughly qualified Second Class Engineers will not exceed the demand and that every hard-working student in the Institute may feel that remunerative employment will be the reward of good work in the Institute. The admissions just now are fewer than they were at first, but the Board have, on a former occasion, pointed out that when the Institute was first

opened there was a rush for admission. Some came who were physically unfit to follow the course of instruction. Others entered under the impression that a course of technical education would in itself fit them for employment as Engineers, Carding or Spinning Masters or even as Managers. They did not realise that whatever technical instruction the Institute might give it could only be of commercial value when combined with practical experience." H. E. Lord Harris, who presided as stated previously, in the course of his observations remarked: "Your reply, Sir, I should imagine will be satisfactory to the public of whom I am one, and I have no hesitation in saying that the reply you have made is a satisfactory one. I congratulate the Board upon the success it has met with in the past and I sincerely hope it may continue to be as successful in the future."

The Board's reply and the reassuring remarks of the Governor had the effect of silencing the adverse criticisms and the abandonment of the proposals for the withdrawal of the permission granted to the successful students of the Institute to sit for the Second Class Engineers' Examinations under the Boiler Act. But although the Board had no cause to complain of want of means and the Institute had buildings, appliances and a staff capable of giving a sound technical education; although there were many scholarships, the fees almost nominal and an ever-increasing demand for engineers, mechanics and overlookers in mills and factories, yet the Institute was not full or half full in spite of the additional fact that 78 per cent. of the young men, who had passed through the full three

W. D. SHEPPARD, Esq., I.C.S.
One of the Trustees, 1905 to date.

years' course, were known to have obtained remunerative employment. Why this should be caused the Board much thought and the reports were called with the object of seeing if anything could be done that would draw more students. It was feared that here, as was the case in the early days of technical education in Europe, the advantages of such an institution as the Institute were not fully understood nor appreciated by the classes whom it was intended primarily to benefit. The difficulty was there and it had to be faced with quiet fortitude. The Board felt that they must move cautiously and that careful consideration must be given to every advance they wished to make. The untiring energy of the Hony. Secretary had now prepared the way for the establishment of a trade schoool in connection with the Institute. He had obtained the consent of Sir Dinshaw Manockjee Petit to the transfer of the fund raised in that gentleman's honour by his friends and admirers to commemorate the occasion of his knighthood which fund had accumulated with interest to over Rs. 40,000 for the establishment of a school for working in Metals and in Enamelling. In conjunction with Mr. Monie, Mr. Wadia had laid out the designs of the buildings and equipment of the new department and on the acceptance of the scheme by the Board preparations were made for laying the foundation of the new school to be called the Sir Dinshaw Manockjee Petit, Bart., School for Sheet-metal Working and Enamelling. In view of the unlimited demand there always was in the country for metal vessels of every description, it was hoped that small metal factories would spring up, managed by the young

Metal Working and Enamelling.

men the Institute proposed to train up in the new school. The field for enamelling—an art unknown in this country—was also considered to be large. H. E. Lord Sandhurst was invited, and on Tuesday, the 24th March 1896, kindly laid the foundation stone of the new school in the compound of the Institute in the presence of a very large and influential gathering of ladies and gentlemen. The building was estimated to cost about Rs. 28,000, and orders for machinery and plant of the approximate value of Rs. 27,000 were under consideration.

Death of Mr. Phythian.

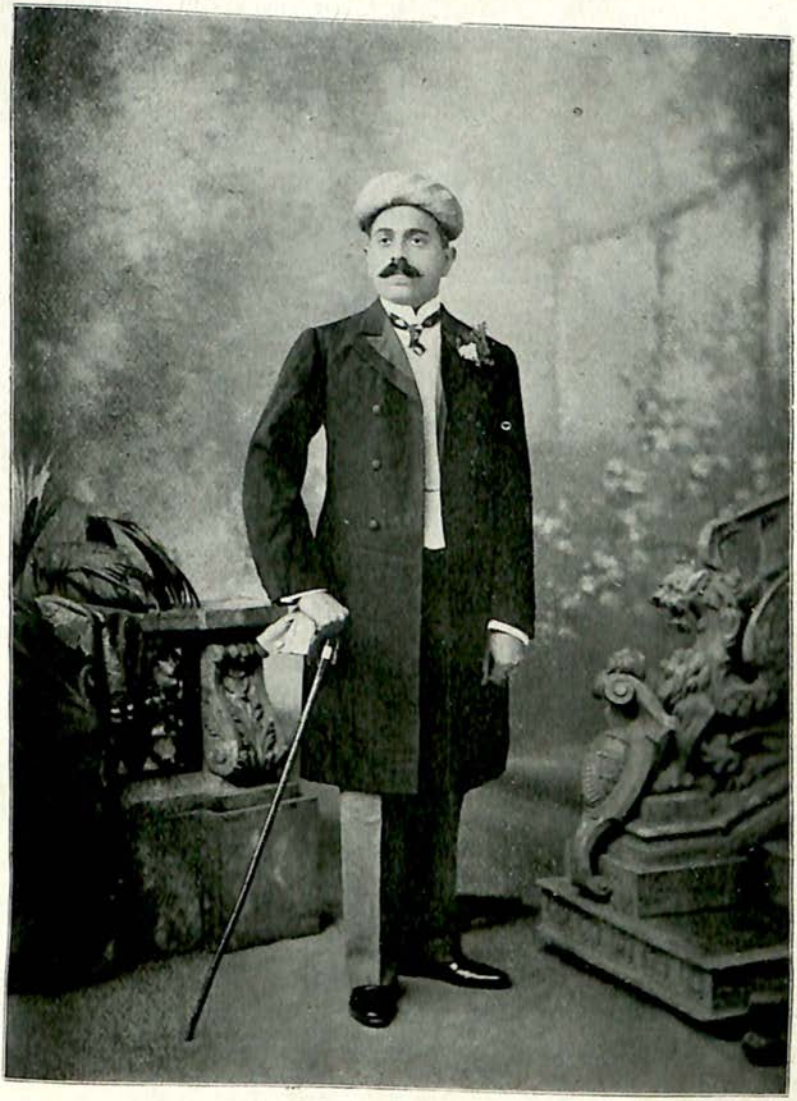
Here the thread of management was suddenly broken by the untimely death of the Principal Mr. Phythian (July 1896) after only a fortnight's illness, and the Board appointed Mr. H. Monie, the Senior Member of the Staff, to officiate as Principal. During the eight years that Mr. Phythian had held the office of Principal, he had given complete satisfaction to the Board by his great energy and undoubted ability in the internal administration of the Institute, and by his work as an able and sympathetic teacher for whom his pupils had great respect and regard. Outside the Institute Mr. Phythian was held in esteem by all classes of men with whom he was brought into contact.

A few weeks prior to his death Mr. Phythian had submitted the reports to which reference has been made, and for the consideration of which a Sub-Committee had been appointed consisting of—

The Chairman Mr. G. Cotton.

The Hon. Mr. Justice M. G. Ranade.

Khan Bahadur M. C. Murzban, C.I.E.



FAZULBHOY CURIMBHOY EBRAHIM, ESQ., J. P.
A Trustee, 1904 to date.

Principal J. T. Hathornwaite, M.A.
Mr. G. A. Barnett, C.I.E., and
The Hon. Secretary Mr. Wadia.

1896. Committee's recommendations.

The Committee had met and made its report on the 14th July 1896, but its discussion had to be deferred in consequence of the death of the Principal. The principal recommendations of the Committee may be briefly stated here. They were as follows :—

(1) That, in order to obtain the diploma, the students should be asked to go through a five-years' course, the three-years' course being continued for such candidates as desired to qualify themselves for a certificate only.

(2) That the Time Table be so revised as to embrace less theoretical teaching and more practice in the workshops during the first three years.

(3) That the qualifications for the diploma should include (*a*) the completion by the candidate of some small piece of work comprising in its execution most of the departments of practical training and (*b*) ability to work for a fair number of hours in continuity.

(4) That a course of popular evening lectures be given by the Principal and Heads of Departments.

(5) That the workshop should be so administered as to produce work that would meet with a ready sale, and that they should be kept open from 9 a.m. to 5 p.m. daily, except on Saturday, when they should be closed at 1 p.m.

(6) That the length of the May and October vacation should be reduced to 6 and 4 weeks respectively.

(7) That efforts should be made to organise classes for instruction in Plumbing and Sanitary Engineering, Electric Transmission and Power, Brickwork and Masonry and Carpentry and Joinery.

(8) That a Library be opened for students.

Reforms introduced.

The Officiating Principal took up the question, and, agreeing with most of the recommendations of the Committee, Mr. Monie prepared a revised programme which was duly considered and sanctioned by the Board. It provided for—

The opening of a Library for students.

The institution of popular evening lectures.

The reduction of the vacations.

The extension of the hours devoted to practical work so that first and second year students could devote 13 hours to lectures and drawing and 27 to Workshop practice, and third year students could give 11 hours to lectures and drawing and 28 to Workshops.

The holding of the Science Classes in the mornings when the students are quite fresh and the assignment of the manual or practical work to the afternoons.

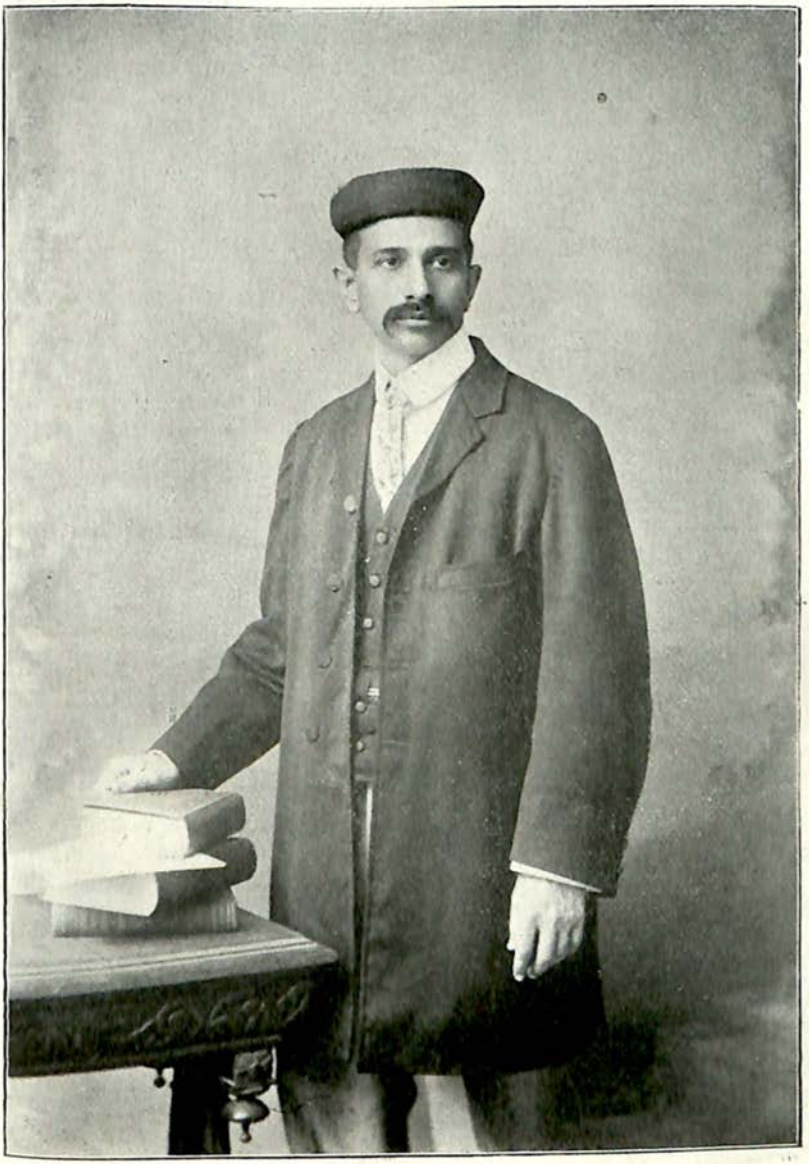
Instruction in Practical Locomotive Engineering.

The turning out of saleable articles.

The letting out of rooms on the top floor of the main buildings to students for residence.

Advanced instruction for a fourth year at the option of the students.

[The new programme commenced to take effect from November 1896.]



THE HON. MR. C. H. SETALWAD, B.A., LL.B.
One of the Trustees, 1903 to date.

City Guilds London Examinations.

About this time the Hon. Secretary, ever eager and anxious to extend the scope of usefulness of the Institute, conceived the idea of giving the Indian students the opportunity of competing with English students at the Technological Examinations held by the City and Guilds of London Institute. He suggested that the authority of the London Institute should be obtained to hold their examinations in Bombay. The proposal met with the approval of the Board and the authorities of the London Institute also willingly agreed to authorise the Bombay Institute to conduct the examinations on their behalf, in Bombay, for Indian students. The first of these examinations were held at the Institute in May 1897, 16 candidates being examined. The question papers were sent out from England and the answers of the candidates were transmitted to London for examination. Of the 16 candidates, 11 were students of the Institute, 6 from the Textile School presided over by the Principal and 5 from the department of Mechanical Engineering. All 6 of the Textile School and 3 of the other 5 were successful, a result which was highly complimentary to the staff and the students. Since then a high percentage of successes has been maintained. Another development about which Mr. Wadia had been very keen for some time was the establishment of Classes for instruction in Plumbing and Sanitary Engineering, a science which was much neglected, but which was daily becoming of more vital importance to the country. He drew up an outline of a scheme, but the unsatisfactory state of his health prevented him from pursuing the subject much further.

Plumbing and Sanitary Engineering.

In a few months more his health had so far failed that, on the 14th December 1898, he had to intimate to the Board that he was proceeding to England by the outgoing mail and to request them to allow him to resign the office of Honorary Secretary or to grant him 12 months' leave. The Chairman, Sir George Cotton, observed that it was a matter of much regret that the health of the Honorary Secretary had necessitated his proceeding to England. Mr. Wadia was, so to say, the father of the Institute, having been associated with it from its very inception and had never spared himself in furthering the interests of the Institute. Under the circumstances the Board resolved to grant Mr. Wadia 12 months' leave and asked the Assistant Secretary, Mr. Ramkrishna M. Chonkar, to carry on the work until further orders.

Mr. Wadia goes on 12 months' leave.

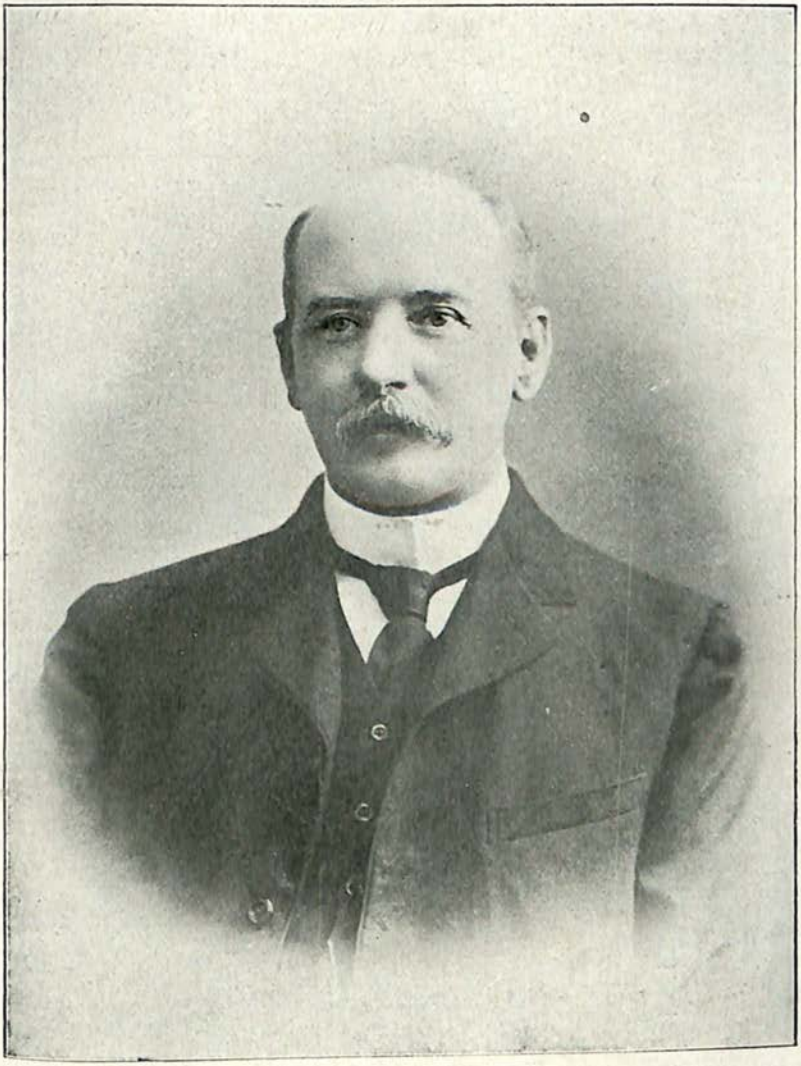
Three months later, the Chairman, Sir George Cotton, was able to induce Khan Bahadur M. C. Murzban to consent to add to his already numerous and onerous public duties the important office of Secretary of the Institute. The introduction of the schedule of appointments, of the system of obtaining stores by public tender, and the execution of repairs to the buildings which had to be neglected for want of funds for a long time were amongst the items of reforms of the early part of the new administration.

Mr. Murzban as Secretary.

During this period Mr. Cotton, the Chairman, resigned office in view of his retirement from the country. He had been a member of the Board since its foundation and its Chairman for about six

Chairman resigned.

A. K. LESLIE, Esq.
One of the Trustees, 1908.



THE HON. SIR WALTER C. HUGHES, KT., C.I.E.
Chairman of the Board, 1899-1900.

years. In accepting his resignation the Board placed on record their cordial appreciation of the valuable services rendered by the retiring Chairman. He was succeeded by the Honourable Mr. (now Sir) W. C. Hughes, M.I.C.E.

In the latter part of Mr. Murzban's administration the Hon. Secretary had to meet the difficulties which arose in the working of the school for metal working and enamelling, owing to the attitude of the Enamelling Master in respect of the composition of enamels which he considered was a trade secret, and the proposal of the authorities under the Boiler Act for the addition of outside practice to the three years' course at the Institute as a necessary qualification for admission to the second class Boiler Act Certificate Examination. Eventually the Enamelling Master resigned, and in regard to the Boiler Act Examination, Government imposed a year's outside practice on the students of the Institute in spite of the strong representations of the Board against the proposal. The imposition of this restriction and the unsuccessful working of the Enamelling School had adversely affected the popularity of the Institute and were calculated to arrest its progress.

Enamelling, Boiler Act, etc.

In this unfortunate situation news arrived of the death, at Bournemouth, in England, on the 19th December 1899, of the Honorary Secretary, the Honble Mr. Nowrosji N. Wadia, C.I.E. The monthly meeting of the Board had been called for the 20th December 1899 and was adjourned out of respect to his memory without transacting any business. The Chairman, the Hon'ble Mr. W. C.

Mr. Wadia's death.

Hughes, in opening the meeting, said: it was his melancholy duty on that occasion to propose a resolution expressing their deep regret at the death of their colleague, the Hon'ble Mr. Nowrosji N. Wadia. The Institute owed its existence and success in a large measure to his never-failing zeal for and interest in its welfare. The Chairman further said Mr. Wadia was an old friend of his, and so probably of all the gentlemen at the table, and he was sure he spoke the mind of the Board in referring to Mr. Wadia's death as a loss which they all deeply felt as a personal one as well as in their capacity as Trustees. He moved that the Board of Trustees of the Victoria Jubilee Technical Institute desire to express their deep regret at the intelligence of the death in England of their colleague, the Hon'ble Mr. Nowroji N. Wadia, C.I.E., that the Board deplore the loss of a colleague whose services to the Institute were from the outset invaluable, and whose devotion to, and zeal for, its interests were so conspicuous, and that they desire to tender to Mr. Wadia's family an expression of sincere sympathy in their bereavement. Besides being the Hon. Secretary of the Institute for nearly 12 years, Mr. Wadia was for years intimately associated with almost every great movement in Western India, particularly with those of an industrial and educational character. He was a member of the Legislative Council, a Councillor of the Municipal Corporation, one of the Trustees of the Port of Bombay, one of the Trustees of the City Improvement Trust, a Trustee of the Parsee Panchayat, the Chairman of the Joint Schools Committee, a Trustee of the Freemasons' Hall, a Member of the Committee of the Mill-

THE LATE MR. JUSTICE K. T. TELANG, C.I.E.
A Trustee (1888-1893) of the Institute.

owners' Association, etc., etc. Mr. Wadia was a gentleman of great energy, ability and resource, and his influence in the City both with Government and the public was very large. His public and private charities were thoroughly catholic and numerous. His death was a public loss to the Presidency.

Position at Mr. Wadia's death.

While Mr. Wadia was the Honorary Secretary, nearly two thousand students had passed through the three-years' course in whole or in part, and of these, 251 had obtained the full Technological Certificates of the Institute, 143 had secured the certificate of the 1st Class in Mechanical Engineering with the title L.M.E.; 44 the certificate of the 1st Class in Textile Manufactures, with the title L.T.M.; 50 the certificate of the 2nd Class in Mechanical Engineering; 11 the certificate of the 2nd Class in Textile Manufactures; and 3 the certificate of the Pass Class. Over 75 per cent. of the students were known to have secured employment at an average monthly salary of Rs. 100; over 100 of the successful students had appeared at the 2nd Class Engineer's Examination under the Boiler Act, and about 60 of them had satisfied the test. During these twelve years the average annual income amounted to Rs. 65,000, consisting of the Government grant of Rs. 30,000, the Municipal Contribution of Rs. 10,000, Interest on Investments Rs. 12,000, and Fees and Miscellaneous Receipts Rs. 13,000. The average annual expenditure amounted to Rs. 63,000, made up of Rs. 50,000 for Salaries, Rs. 6,000 for Coal and Stores, Rs. 7,000 for Insurance, Taxes, Advertisements, and other General Charges. The average number

of students on the roll was about 175, and the average cost per pupil per annum was about Rs. 360. There had been received in money value on account of Capital Rs. 4,17,000 exclusive of the value (Rs. 3,00,000) of the buildings and premises presented by Sir Dinshaw Manockji Petit. Of this sum, Rs. 41,500 had been expended on building and building alterations, and Rs. 1,38,500 on machinery and the equipment of the different departments, leaving a balance on account of Capital of Rs. 2,37,000 which was invested in Government and other Securities. There had been also received sums aggregating to Rs. 73,200, the interest on which was to be applied to the grant of scholarships, prizes and other awards.

The death of Mr. Wadia caused a vacancy on the Board of Trustees. It also rendered vacant the office of Honorary Secretary which Mr. Murzban had accepted on the understanding that it was to be held by him during the absence on leave of Mr. Wadia. The appointment of a successor to Mr. Wadia was a matter of anxious consideration. The Board awaited the nomination by Government of a successor in the Trusteeship, and, pending the decision of Government in that matter, they withheld the appointment of the new Honorary Secretary. On the 9th of March 1900 Government appointed Mr. N. A. F. Moos, B.Sc., F.R.S.E., L.C.E., F.I.C., Director of the Royal Observatory, as a Member of the Board, *vice* Mr. Wadia. Mr. Moos' attainments in Science and his long connection with the Educational Department of Government were admittedly the very qualifications of an ideal Secretary

Mr. Moos as Hon. Secretary.

THE LATE MR. JUSTICE BUDRUDDIN TYABJI.
A Trustee (1882-1892) of the Institute.

The Board, hence, welcomed his appointment as Trustee, and requested him kindly to accept the office of Honorary Secretary, which he did in April 1900. How valuable Mr. Moos's services have been to the Institute during the eight years he has served as its Trustee and Organising Secretary in initiating the various improvements and developments undertaken by the Board since 1900, the following pages will clearly show.

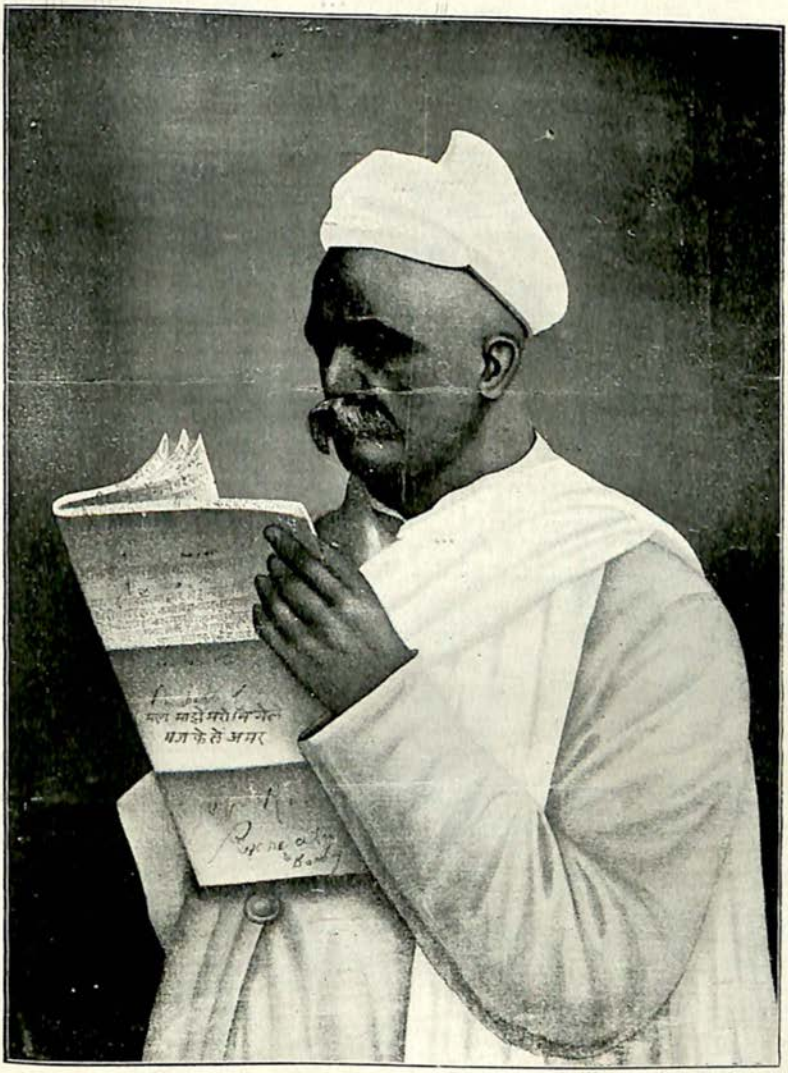
Shortly after Mr. Moos accepted the office of Honorary Secretary, the Chairman, the Hon. Mr. W. C. Hughes, resigned, and Government filled up the vacancy by the appointment of the Hon. Mr. S. Rebsch, M.Inst.C.E., as the new Chairman.

This change added considerably to the responsibilities of the new Honorary Secretary at the outset. The troubles in the working of the Enamelling School had not terminated and constituted a source of no small anxiety to the Honorary Secretary. About this time the Head of the Department of Physics, Dr. H. K. Tavaria, B.Sc., L.M.&S., who had served the Institute with zeal and energy for a number of years, died, and there were signs of an approaching rupture between the Principal and the Mechanical Engineering Master. The situation was difficult and required careful treatment. The Enamelling Master had appealed to the Board for a free hand in the conduct of the department in order to be able to show satisfactory results. He was placed temporarily under the direct control of the Honorary Secretary and was given such facilities as he sought for the successful working of this department. The result proved somewhat satisfactory and some good work was done, but it was not to

continue very long, for the Enamelling Master was dissatisfied with the prospects the Board could offer, and he eventually resigned his appointment. In the Department of Physics Mr. D. D. Kapadia, M.A., B.Sc., had been appointed to the vacancy caused by Dr. Tavaria's death. He had to be allowed to resign in consequence of his appointment to a Professorship in the College of Science at Poona. The friction between the Mechanical Engineering Master and the Principal terminated in the retirement of the former. In the Science Classes the three years' engagement of the Lecturer in Steam and Mechanics was about to terminate. In the other departments the staff generally had not had any material encouragement for some time and a re-organisation appeared necessary. Hence in October 1900 a Committee was appointed to consider the question in connection with the preparation of the Budget-Estimates for the ensuing year. The first half of this year (1901-02) will ever have a most melancholy interest, for it was during this period that India suffered the loss by death of the greatest and most beloved Sovereign of modern times, the Queen-Empress Victoria; one of the foremost leaders of new Indian thought and aspirations and a man of gigantic intellect who was respected throughout the length and breadth of the country as much for his high thinking as for his plain living, the Hon. Rao Bahadur M. G. Ranade, M.A., LL.B., C.I.E., and one of the greatest public benefactors of the country and the munificent donor of the magnificent home of the first and most advanced Technical Institute in the country—the Hon'ble Sir

Need of re-organisation.

1901-02.



THE LATE MR. JUSTICE M. G. RANADE, C.I.E.
A Trustee (1893-1901) of the Institute.

Dinshaw Manockji Petit, First Baronet. The latter half of the year is rendered memorable in the history of the Institute by the introduction of the Honorary Secretary's scheme of re-organisation, the immediate fruit of which was a new section for training students in electrical science and engineering. For a long time this branch had been considered a most suitable and desirable addition to the scope of usefulness of the Institute. The difficulty had been the want of funds. Mr. Moos' scheme of re-organisation enabled the Board to provide a chair of Physics and Electrical Engineering and to purchase the apparatus urgently needed for a small beginning in the new department. Mr. S. Joyce, an English Electrician of large experience, was appointed to the chair, and the work of instruction was commenced in January 1903. The Board recognised that the equipment of the new department was far from complete or satisfactory, and they were anxious that it should be thoroughly well equipped for the requirements of a complete theoretical and practical course of instruction. But they were not prepared to rob Peter in order to pay Paul, Peter being the older departments of Mechanical Engineering and Textile Manufacture. They had increased the salary of the post of Head of the Mechanical Engineering Department and were fortunate in securing for the appointment the services of Mr. T. S. Dawson, an English Engineer of large and varied practical experience, who possesses in addition a thorough grasp of the scientific facts and principles underlying his profession. On his representation the Board sanctioned a suitable exten-

Electrical Engineering introduced.

Improvement of Mechanical Engineering Department.

sion of the Foundry and Smithy sections to meet the growing demand for admission. Efforts were made to secure in the Textile School the maintenance of the high standard of efficiency which had enabled the students passing out of the school to obtain ready and remunerative employment. This year the Institute received visits from many distinguished persons, amongst whom were, besides His Excellency Lord Northcote, who also presided at the Annual Distribution of Awards, Professor Ramsay, Professor Mason, Sir Edmund Burke, Dewan Bahadur Vithaldas Samuldas and Diwan Bahadur Raghavengar; and the influential Committee on Industrial Education, appointed by the government of Lord Curzon, also visited the Institute. The Committee consisted of Col. J. Clibborn, Rev. F. Westcott, Mr. C. A. Radice, I.C.S., Mr. R. E. Enthoven, I.C.S., and Mr. H. C. Quin, I.C.S.

Distinguished visitors.

The growing popularity of the Institute had the effect of a large increase in the number of applicants for admission, and in 1903 the demand increased to such an extent that the Trustees had to consider the means by which to limit the number of students. The alternatives were either to increase the amount of fees payable by the students, and thus make the money qualification the test for entrance or to subject the applicants to an entrance examination, by the results of which they should be admitted. The Trustees adopted the latter alternative, and it was hoped that, in securing a generally higher level of education preliminary to admission, the Institute might be able to demand a higher standard in the annual examination, with the

Entrance examination.

THE LATE SIR JAMSETJEE JEJEEBHOY (4TH) BART.
A Trustee (1901-1908) of the Institute.

result that a better class of trained men might be sent out into the world. Those of the applicants who had passed the matriculation or the school final examination were exempted from this examination, but others were admitted only in the order of merit shown by the marks obtained in the entrance examination up to the number of available vacancies. The subjects of the examinations included rough outline drawing from a black board example, English composition (such as to describe any railway journey the candidate had made), dictation in the form of taking down a few sentences carefully read out by one of the Examiners, and mathematics, comprising general arithmetic and algebra up to simple equations. Since then modifications in the test for entrance have been made as suggested by the experience gained year after year. The entrance examination now includes—

1	Paper of one hour's duration		in English Composition.
1	Do.	do.	in Simple Free-hand Drawing.
1	Do.	do.	in Mathematics as at Matriculation.
1	Do.	do.	in Chemistry as at Matriculation.

The public interest in technical education aroused by the proceedings of the Committee appointed by the government of Lord Curzon, to which reference has been made and the publication of a Government of India Resolution dealing with the recommendation of the Committee, was enlivened by the holding of an Educational Conference early in March 1904 under the presidency of the Hon'ble Mr. E.

Educational Conference.

Giles, M.A., C.I.E., the Director of Public Instruction, Bombay. The Conference was attended by Messrs. Wallace and Burns as representatives of the Institute. Mr. Monie, the Principal, attended the Conference by invitation. The discussion lasted for two days. The subjects considered were—

Scholarships for training of Indian students in England;

The provision of normal classes for training technical teachers;

The supervision or inspection of technical and industrial schools, and

The requirements of particular institutions.

The Conference formulated a resolution in favour of developing classes in connection with the large central Institutions and the expansion of such institutions and their inspection by experts; and a systematic development of the hand-loom industry. State Technical Scholarships in connection with textile industries were approved. Mr. Monie urged on the attention of the Conference the necessity of funds for the Departments of Electrical Engineering and Technical Chemistry in the Institute.

In the following month the Hon. Mr. Rebsch resigned the office of Chairman in consequence of his retirement from India, and Mr. G. Owen Dunn, who had succeeded him as Chairman of the City Improvement Trust, was appointed Chairman in his place. About this time complaints were made in the press that the management of the local mills and factories had not fallen into the hands of those who had studied in the Institute, and the propriety was questioned of spend-

Public criticism.

THE LATE MR. JAMSETJI N. TATA
One of the Trustees, 1898-1900.

ing large amounts and carrying on the work on the lines adopted. The criticism was made the subject of a motion in the Municipal Corporation for a Committee of Inquiry. A public reply from the Board was necessary to allay the fears raised in the public mind as to the success of the In stitute, and this was furnished by the speech of the Chairman delivered on the 11th November 1904 when the motion came for discussion before the Corporation. In that speech the Hon'ble Mr. Dunn very ably defended the Institute from its critics. He said he was unable to support the motion, because criticisms, which were conceived certainly in no friendly spirit towards the Institute, were engaging the attention of the Board of Management, and as the Corporation was strongly represented on the Board, they might consider their interests were in good hands. He was not sorry, however, that the matter was brought forward because it gave him an opportunity of putting before the public the general facts. The Chairman proceeded to point out that the Institute was not merely professional but disciplinary, and aimed not so much at turning out a mechanic fully equipped for one particular industry as to give such an elementary training as would enable the student, when he selects his profession and enters the workshop, to make much faster and more intelligent progress than untrained mechanics. With regard to the criticism that a large proportion of the students failed to obtain employment, Mr. Dunn observed that this was a very serious indictment and probably more serious than any of the others as regards its effect on the Institution, for it touched more closely the prospects of intending students. The critics of the

Institution appeared to think that it ought to turn out a student at the end of his three years a finished craftsman. It could not be too strongly insisted upon that this was not nor could it be the case. The object of the Institution was to give the student sufficient scientific training combined with as much practical work as time would allow, so that when his time at the College was finished, he could work with his head as well as his hands while he was perfecting himself on the manual part of occupation he had chosen. If a student imagined that he was a finished craftsman when he left the Institute, he had himself to thank if he failed to obtain remunerative employment. The Chairman proceeded to give figures as regards employment, and showed that, out of 266 diploma holders who could be traced, 251 were reported to be employed, and as regards the remaining 15 it was at least equally just to assume that they were employed as that they were unemployed. Mr. Dunn then turned to the statement that the salaries obtained had given rise to considerable disappointment and gave figures which showed that upwards of 50% were in receipt of Rs. 100 and more. Referring to the allegation about the large expenditure of the Institution, Mr. Dunn pointed out that the cost was not calculated by the critics in the correct way, and their figures were apparently intended to give a wrong impression. He explained that the proper way of comparing the cost was by pupils attending not by pupils passed out, and he showed that, on the average of the past 15 years, the cost per student at the Institute had been Rs. 350, that of the Grant Medical College Rs. 480 and of the College of Science Rs. 740. It was implied that

THE LATE MR. J. P. PHYTHIAN, C. E.
First Principal, 1888-1896.

THE LATE MR. HUGH MONIF.
Second Principal, 1896-1905.

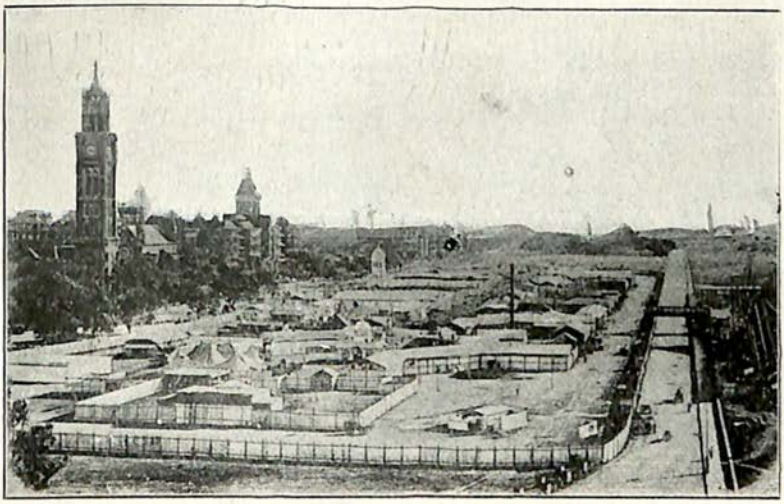
the reason for the high cost per student was the very small percentage of pupils who obtained the diploma, *viz.*, 14%. Mr. Dunn showed that only 9 per cent. of the students of the Grant Medical College obtained the L. M. and S. degree, and 13 per cent. from the Elphinstone College obtained the degree of Arts, that the average for all Arts Colleges was 11 per cent. The average of all the Professional Colleges was 12 per cent. The Chairman then alluded to the opposition to the Institute, and stated that it was of the same class as that which technical education had had to face in other countries in which it had been introduced. It was conceived in the same spirit as that which led the hand-loom workers of Lancashire to riot when steam running machinery was first introduced. But there was evidence that the students of the Institute were being gradually more and more sought for, and that they were in fact demonstrating to unwilling and prejudiced masters their capability and usefulness. Mr. Dunn concluded by expressing his belief that the Institute would be able to show increasing progress, and would in time overcome the opposition it had now to face.

The speech was a complete answer to the criticism, and the discussion might well have ended there, but it was not to be. Some of the later speakers introduced into the debate much purely personal matter, and the discussion occupied three sittings. In an elaborate and eloquent speech, extending over two sittings, the Hon. Sir P. M. Mehta dealt with the later criticism in minute detail, and having thoroughly exposed the hollowness of the agitation concluded by observing that, like all other

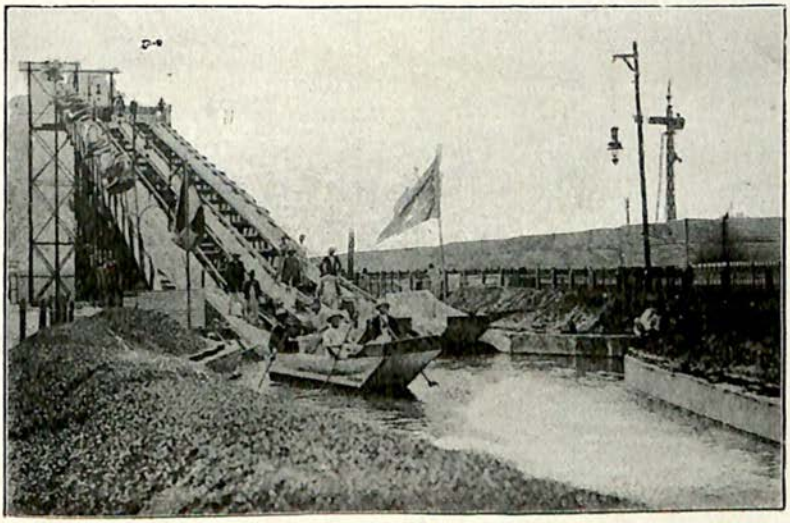
educational institutions in the country, the Institute was not perfect, it was ill-equipped, but it was the duty of the Government as State landlords and of wealthy millowners and mill agents to dive their hands deep into their pockets and support the Institution which, if more money were forthcoming, might be placed on as satisfactory a footing as similar institutions were in Europe and America. Eventually the motion was thrown out, and not only was the unfortunate situation saved by the able Chairman of the Institute and the distinguished leader of the Corporation, but much of the erroneous impression of the public as regards the aim and object of the teaching of the Institute and its most urgent wants was removed.

Bombay Exhibition.

At the Industrial Exhibition held soon after in Bombay in connection with the National Congress, a fresh opportunity was afforded to demonstrate the working of the Institute and the calibre and spirit of its students. The Institute had an extensive show of the work done by the students and of the apparatus employed in their instruction. At the one end were to be seen a collection of the students' drawings, the patterns made from them, and the resulting castings with many examples of finished work, chief amongst which may be mentioned some lathes and vices and a 6 H.-P. engine made almost entirely by the students which secured a medal. Next followed a collection of apparatus used for the teaching of Physics and Electrical Engineering. A large electro-magnet made by the students was a constant source of attraction as also an experiment to show the principle of the Three-Phase Motor which produced no little wonder in many of the



THE BOMBAY EXHIBITION, 1905.



THE WATER-CHUTE, 1905.

visitors. The whole of the stall was lighted by various types of electric arc lamp belonging to the school, including the new flame arc lamp which lighted the textile and aluminium exhibits. Here there were on view spinning and weaving machinery with samples of cotton from all parts of the world, and specimens of cloths woven and aluminium utensils and articles of various kinds made by students. Many of the students of the Mechanical and Electrical Departments of the Institute had been working on various of the exhibits and in wiring parts of the exhibition for the general electric lighting, in many cases working far into the night on several occasions. Many of the students also willingly assisted their Master Mr. Dawson in putting up the Water Chute which was the attraction amongst all the forms of entertainment. The vertical height of the platform above the water-level was 42 feet with a total width of 17 feet, not counting the foot-way, whilst the actual distance along the slides which each boat passed through was 160 feet before it reached the surface of the water which was 5 feet to 3 feet deep. The lake was looped with the wider main way where the boat reached the water and the boats were hauled up by being attached to an endless rope worked by one of the Hornsby Ackroyd oil engines. It took about half a minute to haul up a boat and four to five seconds to slide down again and in ordinary working an average of 30 boats per hour had "shot the chute."

Water chute.

The time now appeared suitable to set out the wants of the Institute and to appeal to Government and the

public for monetary support in order to enable the Board to undertake the development and extensions which were urgently necessary. In deciding upon the details of the scheme of improvement and development, considerable help was expected from the long experience of the Principal Mr. Monie, but owing to his sudden death the brunt of the important and difficult task fell upon the Chairman Mr. Dunn, the Hon. Secretary Mr. Moos and the Ag. Principal Mr. Dawson. Mr. Monie had given many years to the service of the Institute, which he had joined some months prior to its formal opening in April 1890, and had conducted the duties of Principal for 9 years with energy and ability. He was very popular with the students and the staff, and he was the author of some very useful books, dealing with engineering and textile subjects.

Developments considered.

Mr. Monie's death.

The appointment of a successor to the late Mr. Monie was a matter that engaged the anxious consideration of the Board. The appointment was made in November 1905, and the new Principal arrived early in December 1905. During the nine months which intervened between the date of Mr. Monie's death and that of the arrival of his successor, Mr. Dawson was in charge as Principal. His tenure of office was marked by great zeal, energy and ability. He co-operated loyally with the Board in initiating some very important administrative and disciplinary reforms, and rendered the Trustees considerable assistance in increasing the utility and the scope of the Institute. At his suggestion the Board reserved to themselves the power to reject boys

Mr. Dawson as Ag. Principal.

MR. T. S. DAWSON,
Present Principal.

who may be physically unsuited for the work expected of them at the Institute or who may be likely to drop away before completing their course owing to pecuniary reasons. Power was also reserved by the Board to remove, on the recommendation of the Principal, any student who may appear to be unlikely to profit by the training given. The Gymkhana was placed under the direct control of the Principal and its membership was made compulsory on all students. A Dormitory Superintendent was appointed to ensure cleanliness and orderly behaviour on the part of the resident students. For the benefit of the members of the Staff the establishment of a provident fund was suggested. On the educational side the programme of Class Work and Workshop Practice was carefully revised, and in view of the importance attached to the practical part of the training in the students passed out, the qualifying percentage of marks for a certificate was raised from 33⅓ to 40.

Reforms in 1905.

At the instance of the Ag. Principal, the establishment of a Central Electric Power Station was undertaken. The engines which supplied power to the different departments were neither large nor of recent construction. This was a serious defect, and multiplicity of small engines did not allow of that thorough practical instruction which is effectually convenient on a large experimental engine. Through Mr. Dawson's influence, Messrs. Babcock and Wilcox, the well-known firm of Boiler-makers, made to the Institute the free gift of a large water tube boiler of the latest type, a present for which the Board are extremely grateful. Mr. Dawson was also able to secure, on very favourable terms, an oil

Central Power Station, &c.

engine from Messrs. Botliboi & Co., Agents to Messrs. Hornby & Sons, and a large Compound Horizontal Engine from Messrs. Marshall & Co. The development of the Mechanical, Electrical and Textile Departments was also considered, and schemes were formulated for giving effect to the improvements and developments which were urgently necessary.

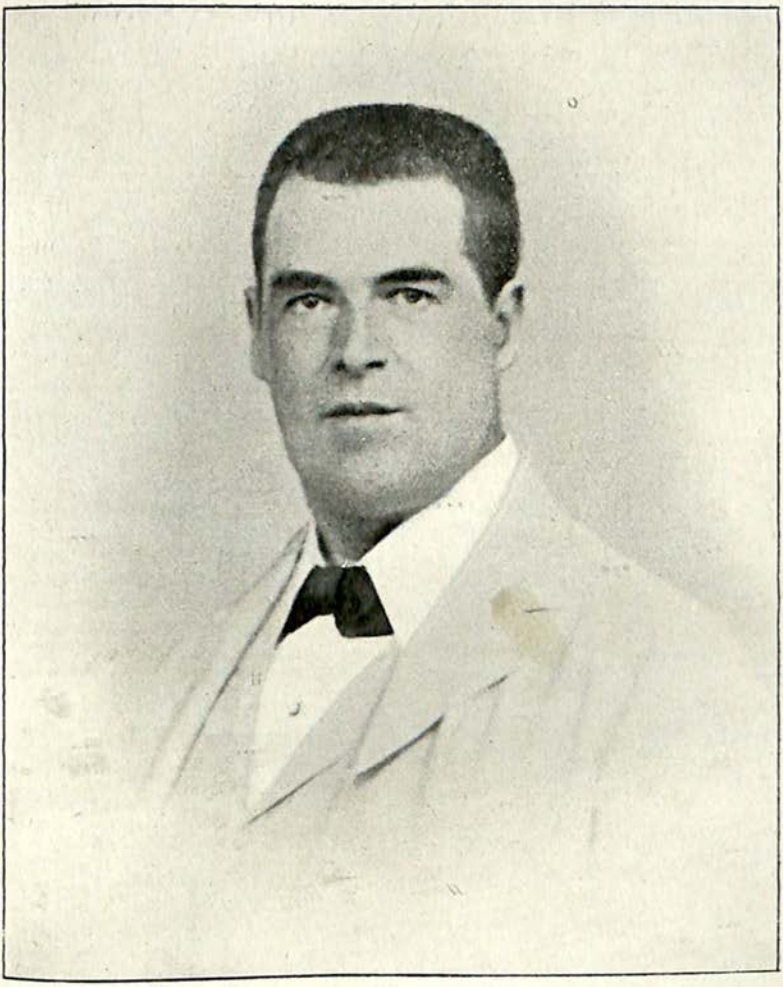
Special Donation.

The Chairman was greatly impressed by the fact that owing to the increase in the number of students it was impossible with the existing lathes and machine tools for each student to obtain the amount of actual practical work which he might otherwise get, and he accordingly conceived th idea of a special subscription from millowners and others directly interested in the quality of the students turned out to enable the plant to be adequately supplemented, and he himself gave a lathe as a present to the Institute.

Residential quarters.

Mr. Dunn also considered it most desirable that the Institute should be able to provide clean and wholesome accommodation, so that the students may not be forced to live in all manner of insanitary quarters amid undesirable surroundings just at that period of their life when they are most easily led astray and when undesirable habits are easily formed. The Chairman looked upon this as a most pressing call on the Board and had under consideration proposals for a suitable hostel to accommodate 200 students.

By the efforts of the Honorary Secretary, the School for Metal Working and Enamelling was placed in a position to undertake, once more, the instruction of students. For



THE LATE MR. S. JOYCE.
1st Electrical Engineering Master.

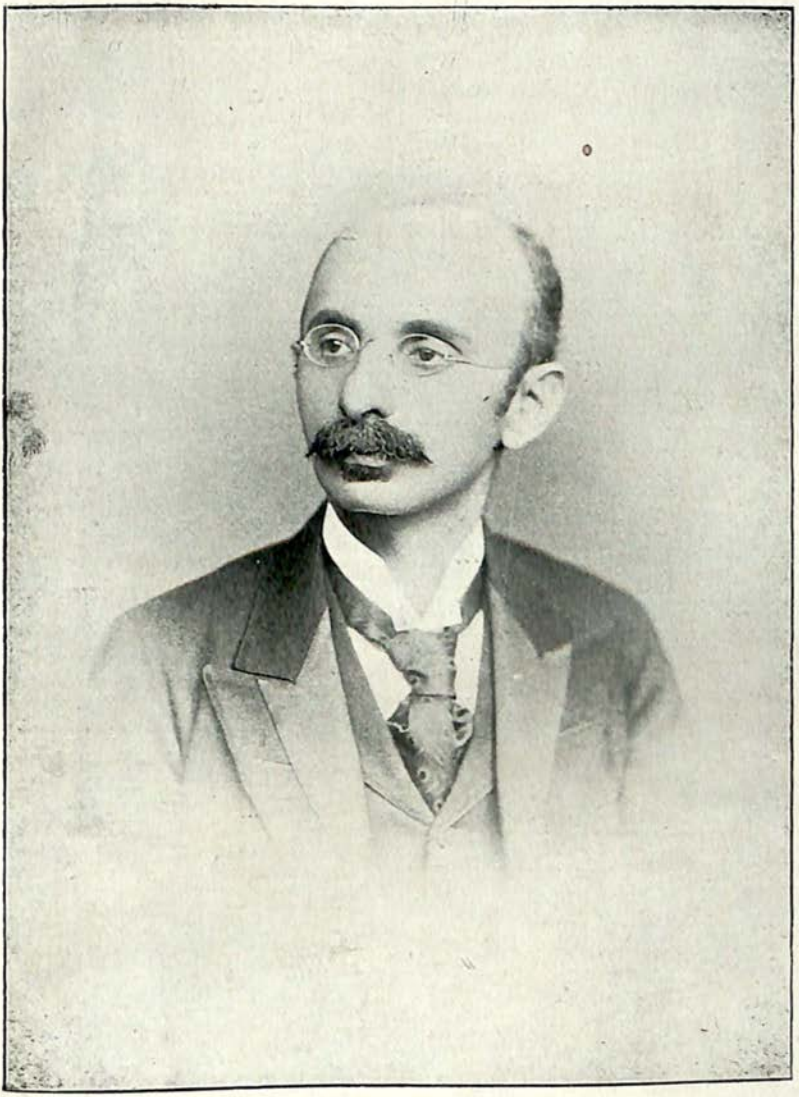
the Enamelling branch the Institute was able to secure the services of Mr. A. S. Kotibhasker, M.A., a Chancellor's Medallist in Chemistry of the Bombay University, who, after three months of experiment, was able to successfully undertake the enamelling of iron sign plates and certain kinds of holloware. For the Sheet-metal Working Department the Board engaged the services of Mr. D. A. Gair, an L. M. E. of the Institute, who had been carrying on a successful metal work factory in the city for some years. Eleven students joined the classes, in which there was room for not more than 20. Mr. Kotibhasker had been engaged for his attainments in Chemistry and he was to be confirmed in his appointment of Enamelling Master and Lecturer in Chemistry on his succeeding in finding out the mixtures used in enamelling within a period of six months. He had not only found the mixtures within three months of his appointment and had successfully executed some orders, but was anxious to be able to show equally good results in the new Department of Chemistry, detailed proposals for the establishment of which had been called for by the Board and were then under discussion between the Acting Principal and him.

Enamelling improved.

At this stage the new Principal, Dr. John E. Mackenzie., D.Sc. (Edin.), Ph.D. (Stras.), arrived and took over charge of the office of Principal from Mr. T. S. Dawson, who, as H. E. the Governor Lord Lamington observed at the distribution of awards held on the 6th March 1906, had been able to do so much during his short-tenure of office as Acting Principal and to bring the Institute on a plane on which Dr.

Dr. Mackenzie the new Principal.

Mackenzie would have to extend his operation further. Mr. Dawson was appointed Vice-Principal in recognition of the valuable services he had rendered as Acting Principal, and it was expected that in that position he would be able from his local knowledge and experience to afford valuable assistance and guidance to the new Principal. The Director of Public Instruction, the Hon'ble Mr. Giles, who had been nearly ten years at the Head of the Department of Education and had administered it with conspicuous success, was confident that the Institute "was never since its inception in a more satisfactory condition and never more worthily deserved the confidence and support of the public than it did at this period." There was an industrial awakening in the country which considerably enhanced the demand for admission to the Institute. In the Hon'ble Mr. G. Owen Dunn the Institute had a most able, sympathetic and tactful Chairman, who gave to its interests freely and ungrudgingly his valuable time. In Mr. Moos they had a Secretary whose zeal for and devotion to the welfare of the Institute was marked. The other Trustees were all eager to help as far as it lay in their power in the development of the Institute on right lines. On the Staff the Principal had for his colleagues and assistants men whose work had amply proved their ability and suitability for the posts they occupied and whose devotion to duty was beyond question. The students as a class were intelligent and desirous of turning their opportunities to the best account. In short the extraneous elements necessary for success were all available for Dr. Mackenzie at the outset of his career as Principal. His



MR. SHAPURJI N. CHANDABHOY, F.R.I.B.A.
Architect to the Institute, 1905 to date.

services had been engaged specially in view of the establishment of a department for training students in Chemistry applied to arts and manufactures generally and particularly to the textile industry, and he was asked to submit proposals for the consideration of the Board.

Chemistry Section.

The Honorary Secretary supplied the Principal with the necessary details and assisted him in formulating a workable and acceptable scheme for the new Department which was in due course sanctioned by the Board. It included the provision of a Laboratory building to accommodate 50 students for practical work at one time and a three-years' course was instituted, intended to give the first-year student a sufficient acquaintance with chemical phenomena to enable him to follow up specialization of chemical work in the second year to the particular requirements of the Textile or other Departments of the Institute, while in the third year he would have sufficient knowledge imparted to him of qualitative and quantitative analysis to fit him to undertake analytical work as applied to Textile Manufacture. The scheme also provided for the construction of a shed for the proposed Sizing, Bleaching and Finishing Section and for the instruction of electrical and textile students in the general principles of chemistry applicable to those branches. Four students joined the new Department and pending the construction of the new building temporary arrangements for instruction of the students were made by utilising a portion of the Enamelling School. Dr. Mackenzie did not, however, long remain in the post of Principal. The conditions of the post were not congenial to him, and he was allowed to sever his connection with

Dr. Mackenzie's resignation.

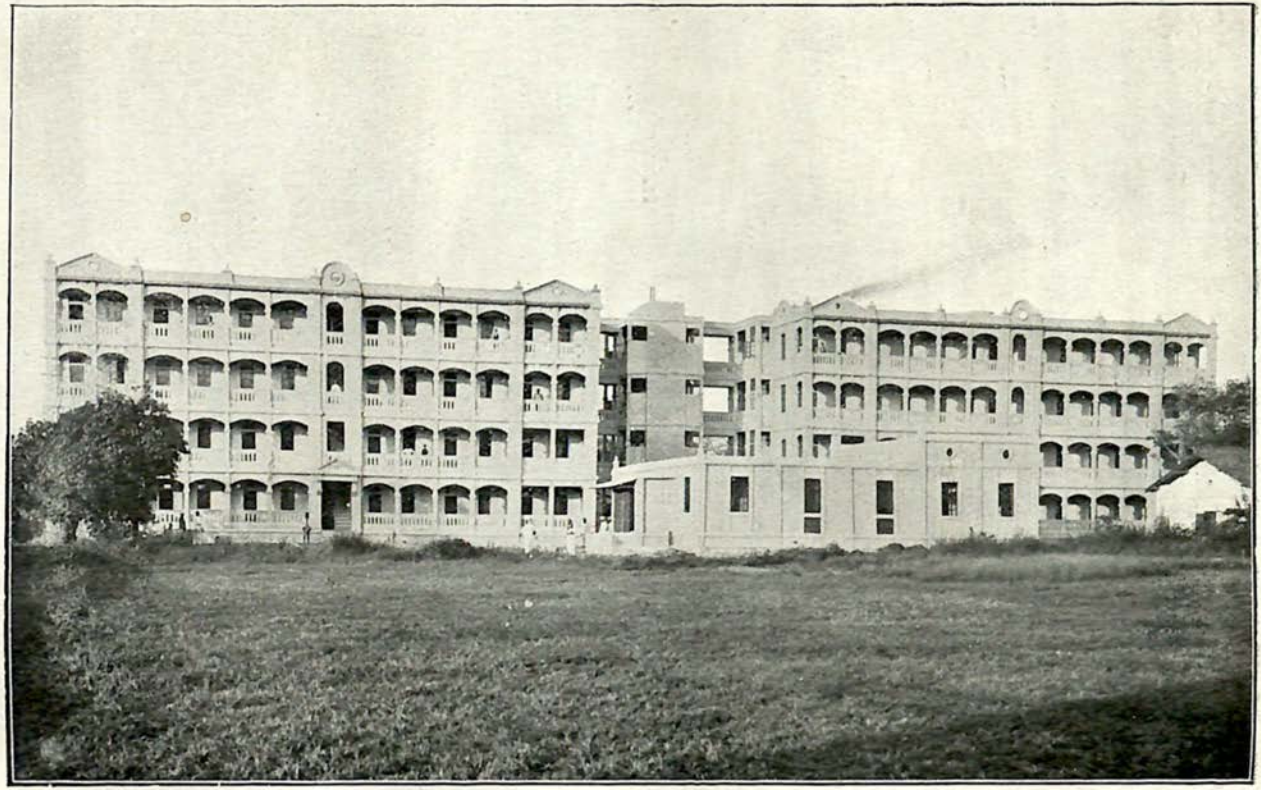
the Institute from the 28th September 1907 within two years of his joining it.

Mr. Dawson again as Principal.

Mr. Dawson was again appointed to act as Principal, and the office of the Vice-Principal, which became vacant in consequence, was conferred on Mr. L. du B. Hugo, B.A. (Cambridge and Cape), who had been selected ten months previously for the post of Head of the Departments of Physics and Electrical Engineering in succession to Mr. Joyce, who died in August 1906 after a short illness. Mr. Joyce had served the Board faithfully for nearly four years, and to him was due the successful organisation of the new department of Electrical Engineering.

Developments in 1905-06, 1906-07, 1907-08.

Before the appointment of Dr. Mackenzie as Principal, the Board had undertaken large and important schemes for the development of the Institute—schemes which involved a non-recurring expenditure of over Rs. 2,00,000 and an additional annual expenditure of nearly Rs. 25,000. They had decided upon exhausting all their available resources in order to meet the heavy cost and had appealed to Government and the public for support. The Chairman had conceived the idea of special subscriptions from millowners and others. This was taken up by the Honorary Secretary, and he was able within a short time to collect over Rs. 15,000. Government generously promised a contribution of Rs. 1,00,000 and the Board decided upon providing Rs. 1,10,000 out of their investments. With the necessary funds thus assured, an almost simultaneous beginning was made in effecting the several improvements early in 1906.



STUDENTS' QUARTERS.

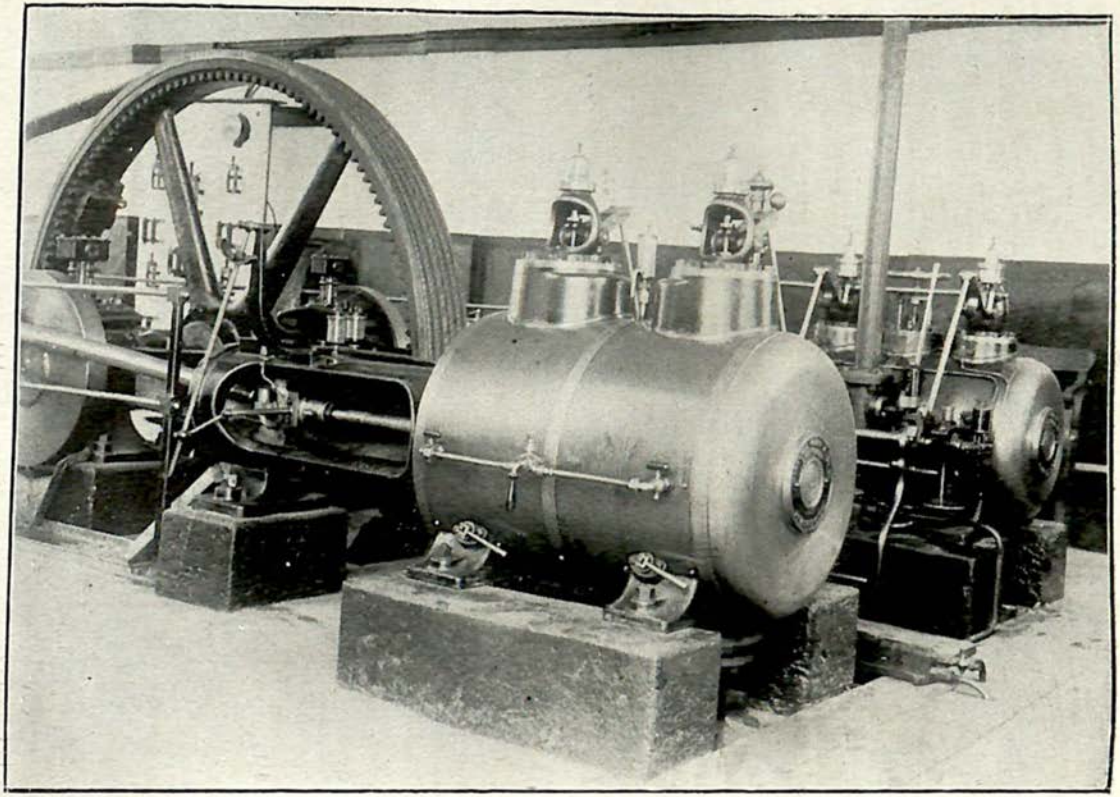
At the instance of the Chairman, Messrs. Marsland, Price & Co. were asked to design a suitable building for residential quarters for about 200 students with separate cook and dining rooms. The design was revised and improved by the Chairman and the Architect, and the buildings were completed in October last (1907). The total cost exclusive of the value of land has been about Rs. 1,00,000. The buildings which cover an area of about 230 ft. × 40 ft. consist of two four-floor blocks with bath and W. C. accommodation in the centre and a separate block of cook and dining rooms in front, and they are built throughout in reinforced concrete. They contain 96 well-lighted and ventilated rooms, 14 ft. × 12 ft., with verandahs in front and with access from a central passage. On each floor there is in addition one small room facing the staircase. The roof is flat and holds large storage tanks intended to provide a regular supply of water to the residents. The separate block of cook and dining rooms provides three large cook-rooms and an equal number of dining halls, separated by a central passage and a general larger hall intended to serve the purpose of a common meeting place for the students. At all stages in their erection, these fine quarters received the special attention of the Chairman, and, thanks to his interest and experience, they should prove a most valuable addition to the Institute.

New Students' Quarters.

The scheme for the Central Power Station was carried out by the Vice-Principal, Mr. Dawson, who had conceived it, and thanks to his untiring energy the station was in full operation in February last, and has since supplied power to the various departments of the Institute. The design of the

building and chimney, their supervision during erection, the setting of the engine and boiler, and the arrangements of the shafting, dynamos, etc., were all attended to by him. He had imbued his students with much of his enthusiasm, so much so that they sacrificed vacations and holidays, came early and stayed late to have the privilege of assisting in the erection of the plant. The station was formally opened by His Excellency Lord Lamington on the 20th February 1907, in the presence of a large gathering who had assembled to witness the ceremony in response to the invitation of the Chairman and Members of the Board of Trustees, and were accommodated in a prettily decorated *shamiana*, put up for the occasion. The Hon'ble Mr. G. Owen Dunn, the Chairman, in requesting His Excellency to open the station among other things observed: "I desire to offer to Your Excellency our warmest thanks for your kindness in consenting to preside here to-day to inaugurate this Central Electric Power Station—the first of its kind we believe in India and probably the first in any Technical Institute—which we have established for the more efficient and economical working of the machinery of the different departments, and for the practical instruction of the students in the most modern types of steam and electric plant. Hitherto the departments of the Institute have each been driven by its own small steam engine of a type now out of date. Each required its own driver and fireman, and they were large consumers of fuel. In future the whole of the shafting in all the departments will be driven from this Central Station. One driver and one fireman only will be necessary, and the coal consumption is likely to be little more

Central Power Station.



ENGINE OF C. P. STATION.

than half what it formerly was. But important as this is, it is the very great value of this installation for instructional purposes and the greater efficiency it will thus give to the Institute courses on which I desire to lay special stress. And in this connection I venture to express the hope that Government will now see their way to exempt the students of this Institute from the additional twelve months' apprenticeship which they are now called upon to go through after completing their three years' course here before they can appear for the examination for the Second Class Certificate under the Boiler Act. We already look upon it rather as a grievance that this extra 12 months is required of our students, for we undoubtedly offer here facilities for practical instruction which would justify an exception being made in our favour. Now, however, that we have this up-to-date plant and can make the students familiar with the most modern practice and appliances, there is, I think, no reason why we should be placed in the same category in this matter with other Institutions which are not in a position to offer a tithe of the advantages." The Chairman then asked His Excellency to accept the silver key with which to open the door of the Station and requested him to set in motion the engine and dynamo and switch on the electric current to the different departments.

Having done this His Excellency the Governor in the course of his remarks complimented the Board on the establishment of the station and observed :—

" It is certainly reasonable to hope, considering the good and thorough training received here in regard to Mechanics, that Government should relieve those who

pass out of this building of the necessity of having a further apprenticeship of 12 months in some factory. I can only suggest that an application should be made to Government, and so far as the facts brought to my notice go, I think there is every reasonable expectation that the concession may be granted.

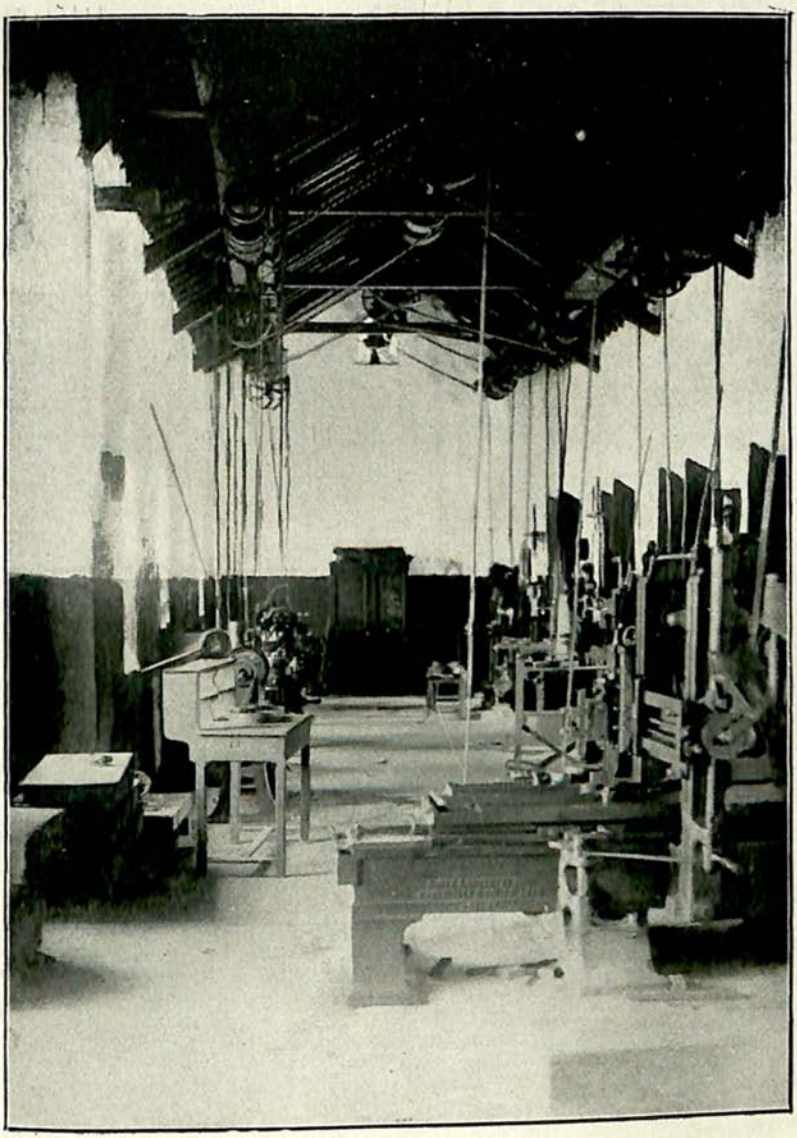
"It is very gratifying to me to come here, and I am very glad to see a new enterprise of this description carried on, as it is by the efforts of private individuals. And I may add that it is very pleasant to me to come to an Institution that is not directly managed by Government and yet is so very much alive and up-to-date. Mr. Dunn has, I know, done his best for this Institution; and I can only re-echo his words in wishing success to the Victoria Jubilee Technical Institute, and I hope it will develop its efficiency from year to year and maintain its foremost position in this Indian Empire."

Patternmaking Shop.

In the Sir J. J. School a new Pattern Shop, designed by the Architect from particulars supplied by the Vice-Principal, was undertaken. This has just been completed and will provide ample room for this branch of the Workshops.

Weaving Shed.

An important addition to the Textile Department has been made in the erection of a Weaving Shed, and thanks are due to Messrs. Platt Brothers, the well-known Manufacturers of Oldham, for their promise to bring the machinery in the Textile School up-to-date, free of cost, and to provide new machinery for the extension of the school on liberal terms.



TOOL SHOP.

In addition to the expenditure on buildings, the Board expended large sums in adding to the equipment of the departments of Mechanical Engineering, Electrical Engineering, the Textile Manufacture and Technical Chemistry.

Increase of Staff.

The large additions and extensions made necessitated an increase in the staff who were to assist the Heads of Departments in carrying out the elaborate programme of work. The appointment of a Head Assistant to each Head of the Department was therefore decided upon and Fellowships were instituted whereby the pick of successful students might gain useful practical experience besides giving assistance to the teachers in the departments in which they graduated.

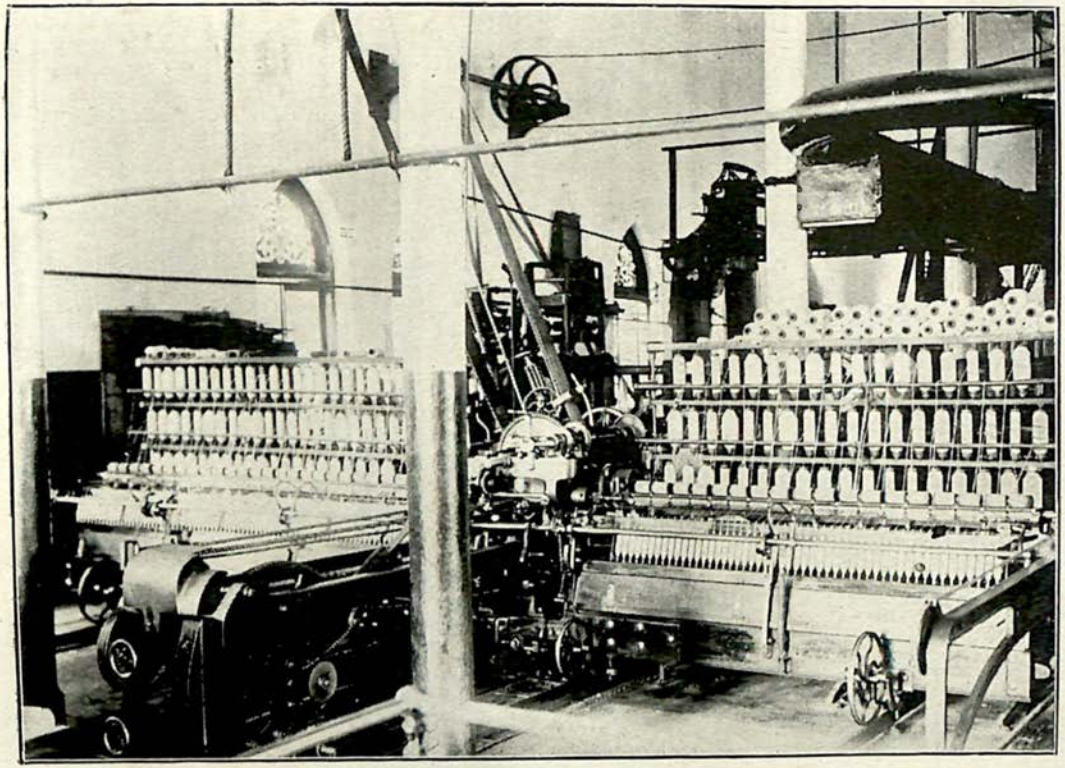
Length of Courses of Instruction.

It was however necessary, in order that all the developments and improvements may have the fullest scope of usefulness conducing to a maximum of efficiency, to supplement them by a thorough revision of the courses of instruction in the different departments, and thanks to the interest of the Chairman, Mr. Dunn, and the Hony. Secretary, Mr. Moos, the accomplishment of this much needed reform completes the history of the last of the twenty years of the Institute with which this record has to deal.

These improvements and developments will enable the Institute to maintain its premier position amongst the institutions for Technical Education in the country for several years to come, and it only remains for the present to watch and mark the progress from time to time.

Twenty years' review.

During the twenty years of its existence the Institute has afforded the benefits of technical education to over 4,000 young men, and of these 531 have passed the final examinations, obtaining the full Technological Certificate. There is every reason to believe that most of them have obtained suitable employment, despite adverse circumstances. A number of them have passed the Second Class Boiler Act Examination and there are several who hold the First Class Certificate under the Boiler Act. The Institute has provided teachers and superintendents for most of the Technical and Industrial Schools in the country, and it may be interesting to note here that for some years past the First Assistants in the Institute have been its passed students. The Institute has also trained some young men who carry on their own professions or trades. A few of the older students have distinguished themselves in the department of original work. Mr. H. F. Dastoor, L.M.E., Superintendent of the Surat School of Art and Industry, has invented an arrangement for the instantaneous fixture of the hydrants, air boxes, etc., upon pipes of water works, which has been the means of saving a large expenditure to the Municipality of his City and for which he has obtained a patent. Mr. Dastoor has also designed and constructed push cocks to prevent waste of water for the Surat and Rander Municipality. Mr. V. A. Talchelker, L.T.M., L.M.E., of the Institute, who has been for some years Manager of a Cotton Mill, has designed and carried out a successful process in Cotton Spinning, for which he has obtained a patent. Two of the passed students, Messrs. Dastoor and Bharucha, have written in



INTERIOR OF SPINNING DEPARTMENT.

Guzerati useful books on Engineering and Mill Work, while Mr. Talchelker has been a fairly regular contributor to a trade journal. Doubtless there are some others who have done likewise. Instances are also available of students who have been successfully employed not long after leaving the Institute on erection works, in Ice and Telephone works, and even in the Marine Department. In the principal department of employment, namely Mills and Factories, connected with mechanical industries, it may be interesting to note that the Pulgaon and the Lahore Mills were in 1904 (subsequent information is not available) entirely managed by passed students of the Institute in the various departments of Mechanical Engineering and Cotton Manufacture. Obviously it is impossible to keep in sight all the students who leave and obtain employment, but the representative record above given will suffice to show that the Institute can well claim to have been successful. In this respect the tables prepared from information collected in 1904 and appended to this record may be found interesting.

"During the twenty years the average annual income of the Institute aggregated Rs. 70,000 including the Government grant of Rs. 30,000, the Municipal contribution of Rs. 10,000, the Millowners' donation of Rs. 3,000, the fees from students, sales of articles made and the interest on investments Rs. 27,000, while the expenditure on salaries, stores, insurance, advertisement and other charges of maintenance has been on an average about Rs. 68,000 per annum. The figures divided by the average annual number of pupils in attendance—200—

give an average annual cost per pupil of about Rs. 350. On Capital Account there have been received in money or money value Rs. 5,36,000 exclusive of the Rs. 3,00,000 which represented the value of the buildings and premises donated by Sir Dinshaw Manockji Petit, and of this sum Rs. 3,11,000 have been expended on new buildings, additions and modifications of buildings and on machinery, tools and apparatus, leaving a balance of Rs. 2,25,000, which is invested in securities. There have been also received sums aggregating Rs. 75,200, the interest on which is applied to the awards of Scholarships, Prizes, etc. The staff has been considerably strengthened and provision has been made for training a certain number of successful students for the profession of Technical Teachers. The scope of usefulness of the Institute has been extended by the addition of new departments which are full of promise. Even the comfort and convenience of the students have been provided for without, in any way, affecting the arrangements for a high class training which has enabled the Institute to maintain its position as the premier Technical Institute in the country and which cannot fail eventually "to give to His Majesty's Indian subjects those industrial advantages which their fellow-subjects in England enjoy and which will tend to develop Indian industries and the exchange of Indian and English manufactures, stimulating the trade of both parts of the Empire and increasing the ties by which they are becoming more united daily."

NAMES OF MEMBERS OF THE BOARD OF TRUSTEES.

PAST AND PRESENT.

(*Arranged alphabetically*).

G. Nominated by Government.
C. „ the Municipal Corporation.
R. „ the Committee of the Ripon Memorial.
M. „ the Millowners' Association.
J. „ the Committee of the Sir Jamsetji 2nd Bart. Memorial.

Acworth, H. A., Mr., I.C.S. C.I.E. ...	1891-1895	C
Adam, Sir Frank Forbes, Kt., C.I.E...	1887-1890	G
Barnett, G. A., Mr., C.I.E. ...	1889-1900	G
Beaufort, A. F., Mr. ...	1895-1896	G
Bisset, W. S. S., Sir, R.E., C.I.E. ...	1892-1893	G
Bhatavdekar, B. K., Sir, L.M. ...	1903	C
Blaney, T., Dr., C.I.E. ...	1887-1896	C
Burns, C. L., Mr. ...	1903-1908	G
Chambers, C., Mr., F.R.S. ...	1887-1888	G
Chandawarker, N. G., Hon. Mr. J....	1901	R
Charles, F. L. Mr., I.C.S., C.I.E. ...	1887-1888	C
Cotton, G., Sir, Kt. ...	1887-1901	G
Cowasjee Hormusjee, Dr., G.G.M.C....	1896-1903	C
Cuffe, T. W., Mr. ...	1902-1904	G
Dunn, G. O. W., The Hon. Mr., M.I.C.E.	1904	G
Edwardes, S., Mr., I.C.S. ...	1907	C
Fazulbhoy Currimbhoy Ebrahim, Mr.	1906	G
Harkisondas Narotamdas, Sir, Kt. ...	1888	R
Harvey, W. L., Mr., I.C.S., C.I.E. ...	1898-1905	C
Hathornthwaite, J. T., Mr., M.A. ...	1896-1899	G
Hughes, W. C., Sir, C.I.E., M.I.C.E....	1899-1900	G
Jamsetji Jeejibhoy, Sir, 4th Bart. ...	1902-1908	J
Karaka Dossabhoy Framjee, Mr., C.S.I.	1888-1901	J
Kemball, H. V. R., Mr., C.E.	1903	G
Kent, R. J., Mr., C.E.	1904-1905	G

Leslie, A. K., Mr.	1908	G
MacMillan, M., Mr., B.A.	1902	G
Mayne, C. B., Lt.-Col., R.E. ...	1901-1902	G
Mehta, P. M., The Hon. Sir, K.C.I.E...	1888	R
Mereweather, G. L. C., Col., R.E. ...	1890-1892	G
Moos, N. A. F., Mr., B. SC., F.R.S.E...	1900-1908	G
Moreland, Henry, Capt. Sir ...	1890-1891	G
Murzban, M. C., KN. BR., F.R.I.B.A...	1888	C
O'Callaghan, I., Mr.	1894-1898	G
Ollivant, E. C. K., Sir, K.C.I.E., I.C.S..	1887-1888	G
Olivier, H. D., Lt.-Col., R.E. ...	1898-1901	G
Patel, Sorabjee Framjee, Mr. ...	1888-1894	R
Petit, Bomanjee Dinshaw, Mr. ...	1895	M
Petit, Dinshaw Manockji, Sir, 1st Bart.	1888-1893	M
Petit, Framjee Dinshaw, Mr. ...	1893-1895	M
Ranade, M. G., The Hon. Mr. J., C.I.E.	1893-1901	R
Rebsch, S., The Hon. Mr., M. INST. C.E.	1900-1904	G
Sarjant, S., Mr.	1905	G
Sayani, R. M., Mr.	1892-1900	R
Selby, H. O., Major, R.E.	1889-1890	G
Setalwad, C. H., The Hon. Mr. ...	1903	R
Sharp, W. H., Mr., M.A.	1900	G
Sheppard, W. D., Mr., I.C.S. ...	1905	C
Snow, P. C. H., Mr., I.C.S.	1895	C
Tata, J. N., Mr.	1898-1900	R
Telang, K. T., The Hon. Mr. J., C.I.E.	1888-1893	R
Traill, W. H., Mr.	1907-1908	G
Tyabjee Buddrudin, The Hon. Mr. J.	1888-1892	R
Wacha, D. E., Mr.	1901	R
Wadia, N. N., The Hon. Mr., C.I.E....	1887-1899	G
Wallace, J., Mr.	1903	G
Wenden, H., Mr., C.E.	1900-1902	G
White, J. H., Col., R.E.	1887-1889	G

Names of Trustees who have held the office of Chairman.

The Hon. Sir Frank Forbes Adam, Kt., C.I.E., March 1887 to March 1890.

Col. G. L. C. Mereweather, R.E., March 1890 to March 1892.

Lt.-Col. (now Sir) W. S. S. Bisset, R.E., C.I.E., April 1892 to December 1893.

Sir George Cotton, Kt., December 1893 to April 1899.

The Hon. Mr. (now Sir) W. C. Hughes, C.I.E., April 1899 to May 1900.

The Hon. Mr. S. Rebsch, M.INST. C.E., May 1900 to April 1904.

The Hon. Mr. G. O. W. Dunn, M.INST. C.E., April 1904 to date.

H. V. R. Kemball, Esq., C.E., July to December 1906.

Names of Gentlemen who have held the office of Secretary.

(*Trustees*)—HON. SECRETARIES.

The Hon. Mr. Nowrosjee N. Wadia, C.I.E., March 1887 to December 1899.

Mr. (afterward Sir) George Cotton, February to September 1891.

Kn. Br. M. C. Murzban, C.I.E., F.R. I.B.A., March 1899 to April 1900.

N. A. F. Moos, Esq., B.SC., F.R.S.E., April 1900 to June 1908.

Dinshaw Edulji Wacha, Esq., June 1908.

(*Non-Trustees.*)

C. N. Wadia, Esq., J.P., June to December 1897.—Ag.

Mr. Ramkrishna M. Chonkar, December 1898 to March 1899—Offg.

The Victoria Jubilee Technical Institute.
1904.

General Summary of Results of Employment Returns.

Particulars.	Engineering.	Cotton.	Total.
Total Students passed out	289	93	382
Reported as dead	8	2	10
To account for	281	91	372
Known to have found employment ...	190	65	255
Percentage of "Employed" to Passed.	68	71	69
In business on own account	20	4	24
Holding appointments, (salaries stated).	125	50	175
Holding posts, (salaries not stated) ...	45	11	56
Total ...	190	65	255
Salaries (average) ... ... Rs.	115	129	119
Lowest salary recorded ... ... Rs.	25	40	25
Highest salary recorded ... ... „	450	350	450
Reported as unemployed	10	5	15

Summary of Return of Employment of Former Cotton Students.

4	Engaged in business on their own account.		Rs.	Rs.
6	Managers and Engineers of Mill, Gin Press, etc.	2 at	350	700
		1 ,,	250	250
		3 ,,	150	450 1,400
2	Engineers in Mill	1 ,,	175	175
		1 ,,	150	150 325
3	Assistant Managers of Mill, Gin Press, etc.	1 ,,	100	100 100
		2 have not stated pay.		
4	Weaving Masters	2 at	250	500
		1 ,,	200	200
		1 ,,	80	80 780
1	Spinning Master	1 ,,	160	160 160
2	Carding Masters	1 ,,	85	
		1 ,,	115	200 200
1	Assistant Weaving Master	1 ,,	125	125
1	Do. Spinning Master	1 ,,	130	130
1	Inspector of Boilers	1 ,,	135	135
4	Assistants in Commercial Houses	1 ,,	335	
		1 ,,	250	
		1 ,,	175	
		1 ,,	150	910
4	Teachers in Technical and Industrial Schools	1 ,,	60	
		1 ,,	75	
		1 ,,	150	285
		1 has not stated salary.		
17	Others employed in Mills, Ginning and other Factories and Workshops	3 at	50	150
		1 ,,	60	60
		5 ,,	75	375
		2 ,,	80	160
		1 ,,	100	100
		1 ,,	110	110
		1 ,,	125	125 1,080
		3 have not stated salary.		
	Of 50, 40 have stated their salaries, amounting to			Rs. 5,630
	(Average Rs. 140.)			
	The following who had found employment previous to 1898-1899 have not reported progress :—			
1	Manager			150
1	Carding Master had not stated salary.			
1	Assistant Spinning Master, salary not stated.			
1	Teacher in Technical School			30
11	Others employed in Mills, Gin Presses, etc.	2 at	Rs. 40	Rs. 80
		2 ,,	,, 50	,, 100
		1 ,,	,, 80	,, 80
		1 ,,	,, 100	,, 100
		1 ,,	,, 125	,, 125
		1 ,,	,, 150	,, 150 635
		3 had not stated salary.		
	Of 65 in all, 50 had stated their salary... Total Rs. ...			6,445
	(Average Rs. 129.)			
2	died			
5	reported themselves unemployed.			
21	have not replied to enquiry.			
93	Total passed out (93 less 2 died = 91).			

65 out of 91 or 71 per cent. are known to have found employment.

Summary of Returns of Employment of Former Engineering Students.

				Rs.
20 engaged in business on their own account.				
5 Managers and Engineers of Mills, Gin Factories, &c.	1 @ Rs. 450	Rs. 450	...	1,350
	1 „ „ 350	„ 350	...	
	1 „ „ 250	„ 250	...	
	2 „ „ 150	„ 300	...	
2 Assistant Managers ...	1 „ „ 130		...	240
	1 „ „ 110	„ 240	...	
38 Engineers in Mills, Gin Presses, Factories, Workshops, &c.	1 „ „ 75	„ 75	...	5,300
	2 „ „ 80	„ 160	...	
	1 „ „ 85	„ 85	...	
	1 „ „ 90	„ 90	...	
	2 „ „ 100	„ 200	...	
	2 „ „ 120	„ 240	...	
	3 „ „ 125	„ 375	...	
	10 „ „ 150	„ 1,500	...	
	1 „ „ 175	„ 175	...	
	1 „ „ 180	„ 180	...	
	5 „ „ 200	„ 1,000	...	
	1 „ „ 270	„ 270	...	
	2 „ „ 275	„ 550	...	
	1 „ „ 400	„ 400	...	
	5 (have not stated salary)			
2 Assistant Engineers ...	1 @ Rs. 80	Rs. 80	...	80
	1 (has not stated salary)			
2 Assistant Superintendents of Workshops	1 @ Rs. 50	Rs. 50	...	50
	1 (has not stated salary).			
1 Electrical Engineer ...	1 @ Rs. 280	Rs. 280	...	280
1 Do. Operator ...	1 „ „ 200	„ 200	...	280
1 Engineer on Steamer ...	1 „ „ 140	„ 140	...	140
1 Inspector of Boilers ...	1 „ „ 135	„ 135	...	135
2 Assistants in Commercial Houses.	1 „ „ 250	„ 250	...	400
	1 „ „ 150	„ 150	...	
22 Teachers in Technical and Industrial Schools.	2 „ „ 50	„ 100	...	1,758
	1 „ „ 60	„ 60	...	
	2 „ „ 65	„ 130	...	
	1 „ „ 70	„ 70	...	
	2 „ „ 75	„ 150	...	
	4 „ „ 80	„ 320	...	
	1 „ „ 90	„ 90	...	
	1 „ „ 100	„ 100	...	
	2 „ „ 125	„ 250	...	
	1 „ „ 138	„ 138	...	
	2 „ „ 175	„ 350	...	
	3 (not stated salary)		...	
30 others as Assistants, Fitters, &c., in Workshops, &c.	1 @ Rs. 40	Rs. 40	...	610
	1 „ „ 50	„ 50	...	
	1 „ „ 60	„ 60	...	
	1 „ „ 80	„ 80	...	
	2 „ „ 90	„ 180	...	
	2 „ „ 100	„ 200	...	
		Carried over Rs.		10,803

		Brought over Rs.	10,803
30	Others as Assistant Fitters, &c., in workshops, &c.—*continued.*	1 Rs. 125 Rs. 125 ... 18 (not stated salary) ...	125
123	79 have stated their salaries amounting to Rs...		10,928
	(Average Rs. 138.)		
	The following who had found employment previous to 1898-99 have not reported progress:—		
3	Engineers and Managers ..	1 @ Rs. 85 Rs. 85 ... 1 „ „ 150 „ 150 ... 1 (not stated salary) ...	235
27	Engineers in Mills, Gins, Workshops, &c.	1 @ Rs. 40 Rs. 40 ... 3 „ „ 50 „ 150 ... 3 „ „ 60 „ 180 ... 2 „ „ 75 „ 150 ... 3 „ „ 80 „ 240 ... 1 „ „ 90 „ 90 ... 4 „ „ 100 „ 400 ... 1 „ „ 125 „ 125 ... 2 „ „ 150 „ 300 ... 7 (not stated salary) ...	1,675
2	Assistant Engineers ...	1 @ Rs. 75 Rs. 75 ... 1 „ „ 100 „ 100 ...	175
2	Assistant Superintendents, Workshops.	1 „ „ 90 „ 90 ... 1 „ „ 200 „ 200 ...	290
4	Assistants in Commercial Houses.	1 „ „ 40 „ 40 ... 3 (not stated salary) ...	40
25	Mechanics in Mills, Gin Presses, Workshops, &c.	1 @ Rs. 25 Rs. 25 ... 6 „ „ 60 „ 360 ... 2 „ „ 35 „ 70 ... 3 „ „ 40 „ 120 ... 2 „ „ 50 „ 100 ... 1 „ „ 60 „ 60 ... 1 „ „ 65 „ 65 ... 2 „ „ 75 „ 150 ... 1 „ „ 85 „ 85 ... 6 (not stated salary) ...	1,035
190	125 have stated salaries amounting to ... Rs ..		14,378
	(Average Rs. 115.)		

8 died.

10 reported themselves unemployed.

85 have not replied to enquiry.

289 Total passed out (289 less 8 died=281) 190 out of 281, or 68 per cent. are known to have found employment.

Summary of Results of Returns of Employment according to Nationalities.

Nationalities.	Total Passes.	Died.	To Account for.	In Business.	Pay Stated by.	Pay not Stated.	Total Employed.	Per cent. Employed.	Average Pay.	Lowest Pay.	Highest Pay.	Per cent. to Pass.	Not Replied &c.
									Rs.	Rs.	Rs.		
Guzerati Hindus	72	3	65	2	37	13	52	84	122	25	400	20	17
Coccani Hindus	138	5	133	6	54	18	78	60	105	25	350	35	55
Northern India Hindus	8	...	8	...	3	3	6	80	93	40	150	2	2
Southern do.	13	...	13	...	6	2	8	61	76	40	125	3	5
Total all Hindus ...	231	8	223	8	100	36	144	70	100	25	400	60	79
Portuguese	43	...	43	2	23	3	28	60	110	40	180	11	15
Europeans	9	1	8	...	5	3	8	100	183	150	250	2	...
Jews	4	...	4	...	3	1	4	100	100	50	150	1	...
Mahomedans...	3	...	3	1	2	...	3	100	100	75	125	1	...
Parsis...	92	1	91	13	42	13	68	72	144	30	450	25	23
Total ...	382	10	372	24	175	56	255	69	119	25	450	100	117

TWENTY YEARS' PROGRESS

OF

Technical Education in Bombay

BEING

A RECORD OF TWENTY YEARS' PROGRESS

OF THE

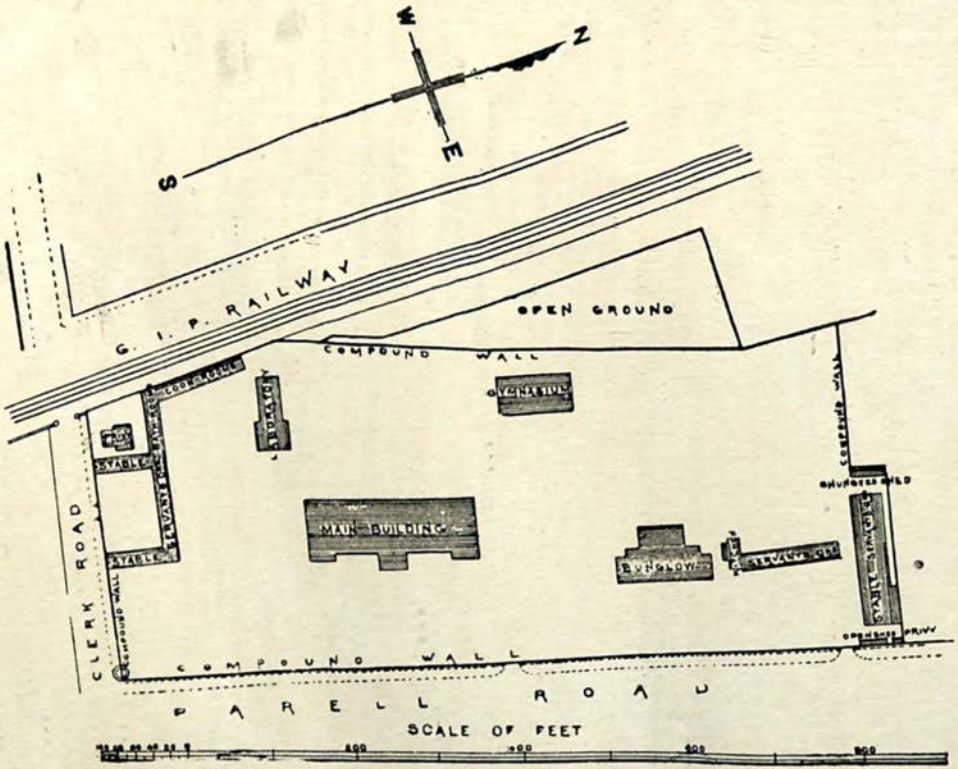
Victoria Jubilee Technical Institute,

1887-1907.

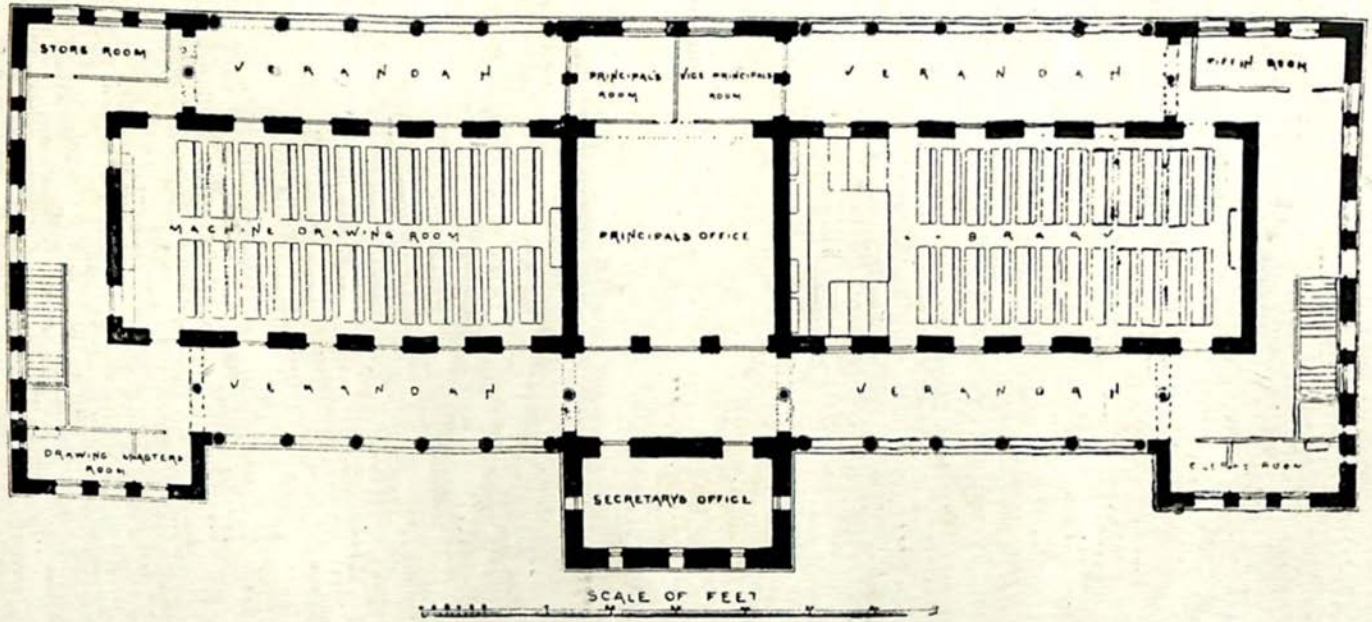
Part 2.—APPENDICES.

LIE... OF THE BOMBA... BRANC... OF THE ROYAL ASIATIC...

81290



PREMISES DONATED BY SIR D. M. PETIT.



1ST FLOOR PLAN OF THE INSTITUTE MAIN BUILDING.

APPENDIX No. I.

DESCRIPTION OF THE BUILDINGS.

BY

SOHRABJEE F. BHARUCHA, M.S.A.

OF

MESSRS. SHAPURJI N. CHANDABHOY & Co.,

Architects to the Institute.

Mr. SOHRAB F. BHARUCHA, M.S.A.,

OF

Messrs. S. N. CHANDABHOY & Co.,

Architects.

DESCRIPTION OF THE BUILDINGS.

—o—

Introductory or General.

The Victoria Jubilee Technical Institute is situated at the junction of Clare Road and Parel Road, opposite the Victoria Gardens, close by the Byculla Station of the G. I. P. Railway Co., and about a mile from the Mahaluxmi station of the B. B. and C. I. Railway Co. It is thus easily accessible by train from the suburban limits of Bombay and the Tram line of the Bombay Electric Tramway Co. running on Parel Road, right up to the Parel terminus, brings it in close touch of and proximity with the heart of the City and the outlying localities. The land apertaining to it covers an area of about 50,000 square yards. The buildings, old and new, which cover an area of about 6,000 square yards, are

1—The College building or main building,
2—The building of the Mechanical Engineering Workshops,
3—The Ripon Textile School Buildings,
4—The Central Power Station House,
5—The building of the Electrical Engineering Department,
6—The Enamelling and Metal Working School building,
7—The Chemical Laboratory building,
8—The Motor Car Shed,
9—The Students' Quarters'
10—The Principal's bungalow, and
11—The Servants' quarters.

These buildings are located in three separate groups adapted to the configuration of the compound. One group contains the College and other strictly educational buildings, another the

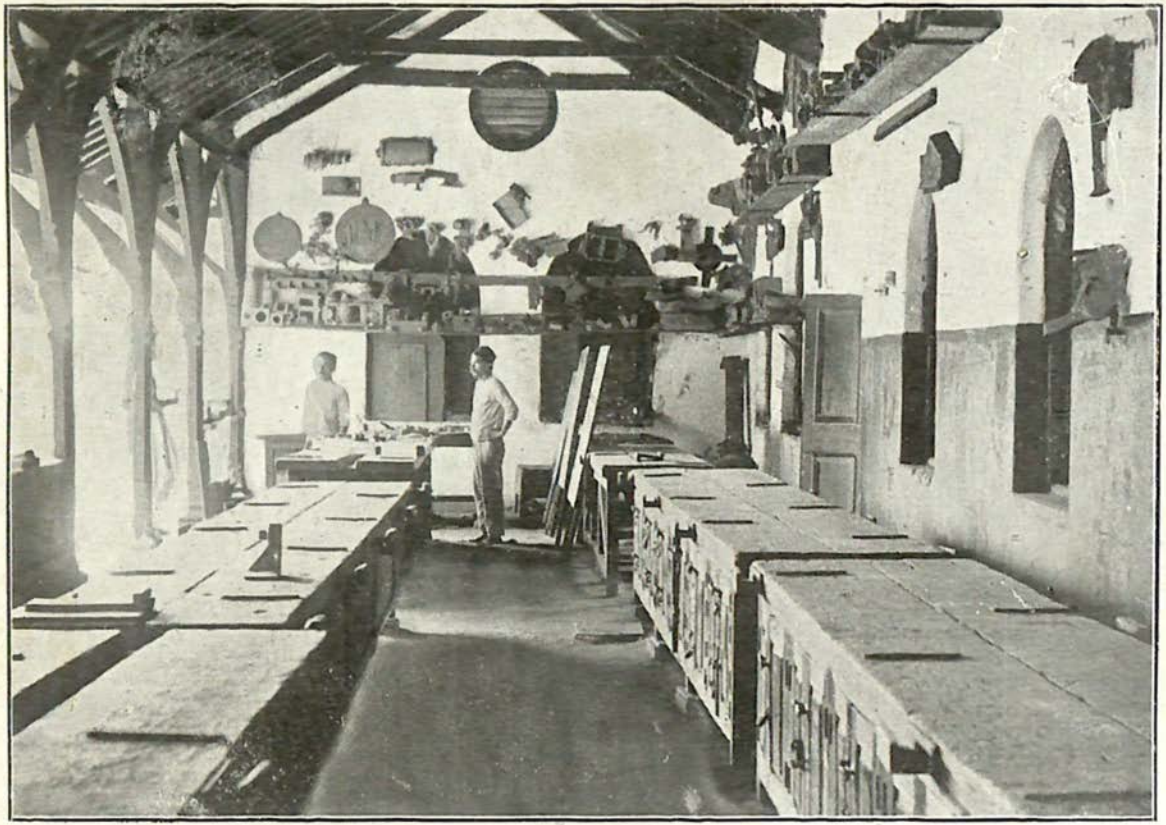
Students' Residential quarters, and the third the Principal's Bungalow and Servants' quarters. Each has a separate entrance leading from the main road, and there is also intercommunication between the groups in the compound.

The buildings are in **Pointed Gothic Style,** excepting the Students' quarters, which are in **Classic style,** and are wholly built in reinforced cement concrete, a modern style, the first of its kind adopted in Bombay.

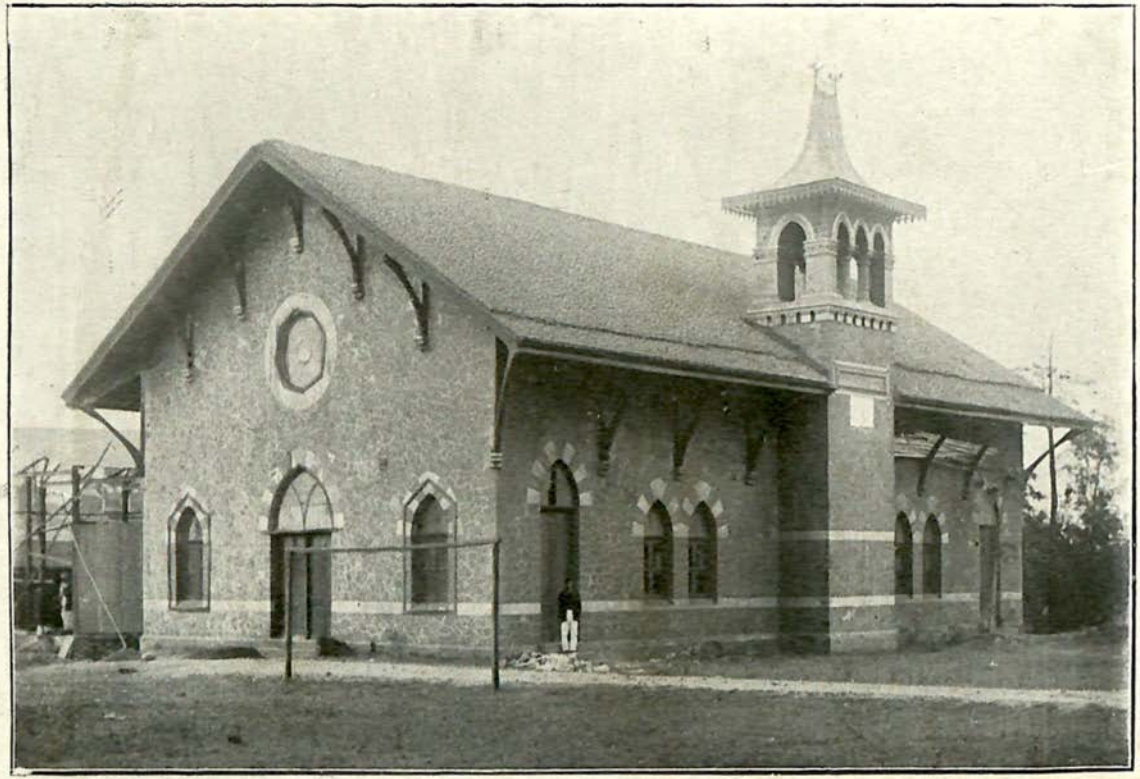
College Building.

The College or Main building (205′ × 75′) is located in the centre and consists of the ground floor, two storeys, and a Central tower including two extra floors with a high pitched tapering roof. A wide corridor surrounds the rooms of each of the floors and in the middle front of the building facing Parel Road is a porch, Two large staircases are located, one at each end of the building. The building is built externally of buff stone khankey facing, with arches of Porebunder stone and blue basalt, alternately set over Porebunder columns. The inside walls are of buff khankey stone with brick masonry backing, chunam plastered and colour-washed. The verandah are paved with Minton tiles and the floorings consist of teak joists and planking. The Lecture rooms have raised seats for students and the ceilings are plastered. The corridors are covered with terraces and have open arches. Large doors and double shutters are used throughout.

The ground floor contains the Physical Laboratory (30′ × 30′) and the Physics Lecture room (30′ × 30′) in the centre: and at the two ends are the Mechanical Engineering and Textile Lecture rooms, each (30′ × 30′). The first floor has a Central Hall used as the Principal's office, and four rooms, two large and two small. One of the large rooms (70′ × 30′) is used for the Drawing Department and the other as a Library



THE PATTERN MAKING SHED.



THE RIPON TEXTILE SCHOOL BUILDING.

Reading Room. One of the two small rooms is used as the students' recess-hour-room, and the other contains the office records. The suite of rooms above the porch is used as the Secretary's Office. The rooms over the main stairs are used as Masters' retiring rooms. The second floor was formerly used as Dormitories for the residence of students.

The Mechanical Engineering Workshops.

The building is built of rough dressed random stone khankey facing, the walls being made of buff and Porebunder stone.

One of its large rooms (50′ × 20′) contains the lathes and machinery pertaining to turning. Another room (105′ × 17′) is used as fitting shop, containing vices and benches, etc. At one end there is the old Pattern-making shop now unused and there are opposite to this two large sheds (50′ × 25′) and (60′ × 20′) used respectively as Smithy and Moulding shops with furnaces cupola, etc.

For the Pattern-making section, a new building (60′ × 30′) was erected last year. This has H. Iron columns built up with brick walls on three sides and a three feet dado of brick on the fourth. The roof is of wrought iron trusses and corrugated iron sheets covered with Mangalore tiles. The Pavement is of Tandool stone.

The Ripon Textile School Building.

This building is located towards the North of the main building and by the side of the West boundary wall, and consists of a large ground floor (85′ × 45′). It is built of Khankey facing and high pitched tiled roof in conformity with the other buildings. This was originally the Gymnasium of the Elphinstone College. It was converted into the Textile Shop on the College buildings being made over to the Institute and contains the Spinning and Weaving departments. For the accommodation

of Sizing, Bleaching and other machinery in connection with this school, a large shed (112′ × 25′) has been recently erected of H. iron columns and corrugated sheet walls with a lean roof, in the immediate neighbourhood of the stone building.

Central Power House.

(50′ × 40′)

This building was erected about two years ago. It is also in Gothic style but is built of brick and has a plaster facing. It has two rooms, one for the Boiler and Stoker and the other for the Engine and Generator. A ridge ventilator runs throughout the length of the building. The energy required to work the machinery of all the departments is produced here, hence the name Central Power Station.

Building of the Electrical Department.

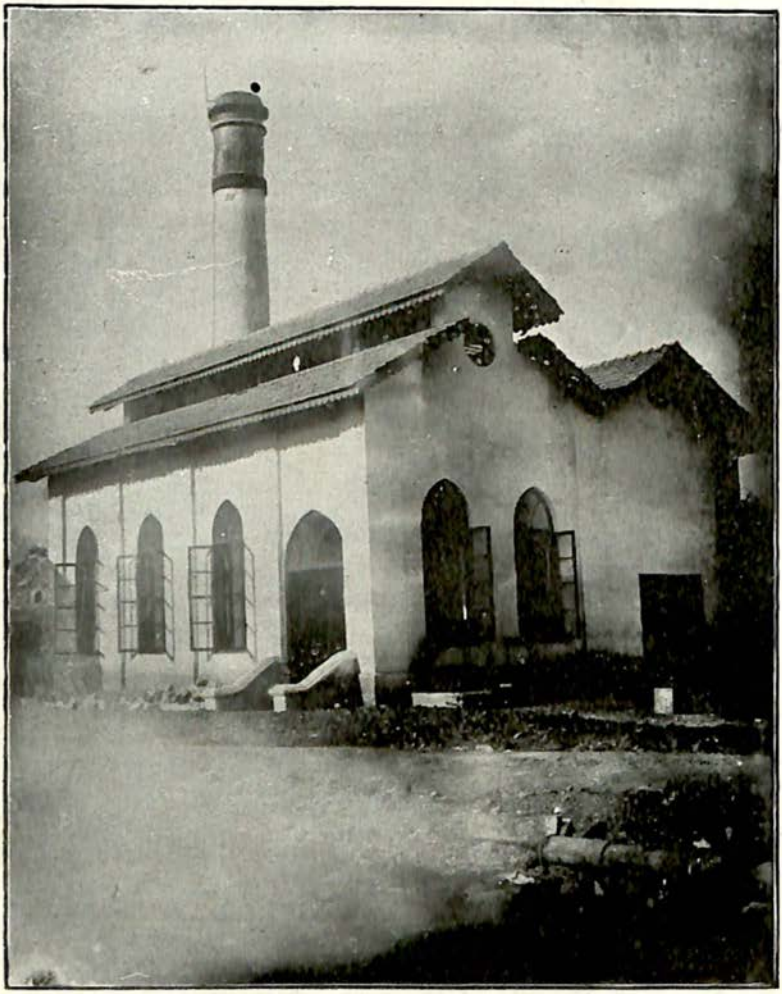
(100′ × 33′)

This is a ground floor building by the side of the western boundary and the south of the main building. It contains, in the three rooms it has, the Electrical Laboratory. This building is now being extended towards the west to hold the additions of apparatus and machines which are on order. The construction and facing of this building are similar to those of the main building.

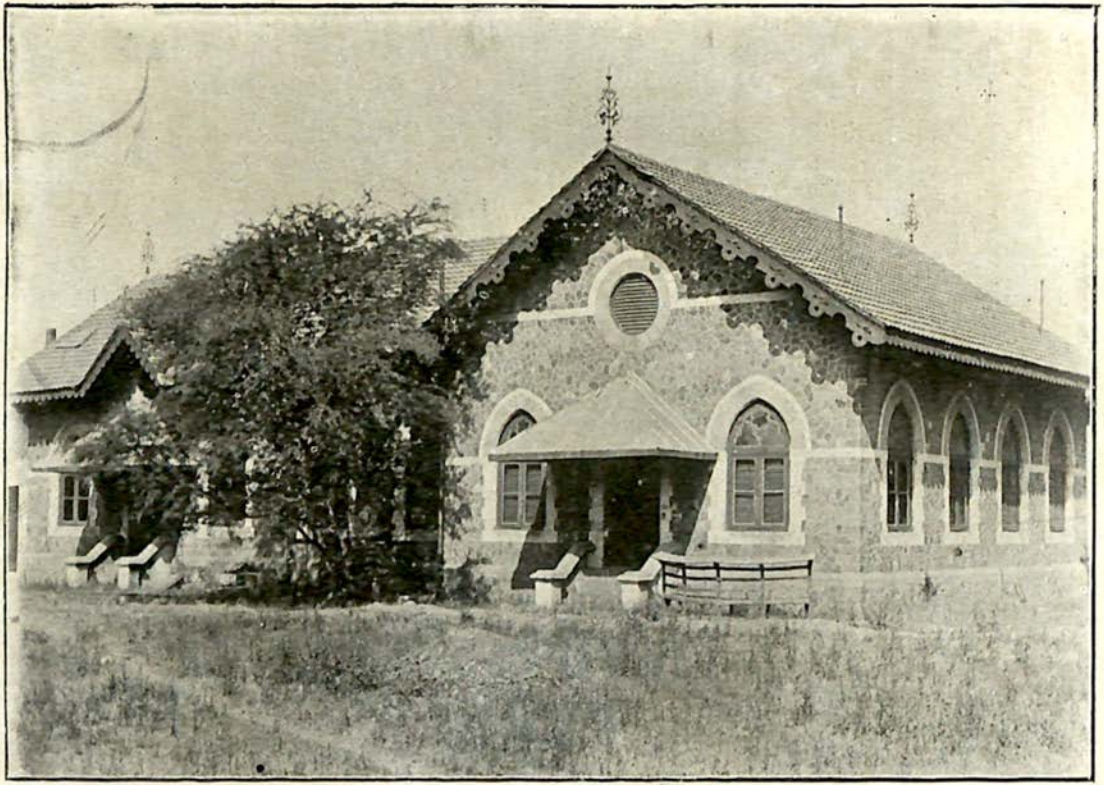
Enamelling and Metal working School.

(90′ × 45′)

The School building has four rooms, two large and two small. In the rear are ovens suitably built up with drying chamber and an independent chimney communicating with the big enamelling furnace. In construction and facing the building is similar to the main building.



THE CENTRAL POWER STATION HOUSE.



THE ELECTRICAL LABORATORY BUILDING.

Chemical Laboratory Building.

(85′ × 35′)

This building, which is near the entrance gate facing the Parel Road, has been recently built. Its central hall is used for experimental work in chemistry and the four small rooms, one at each corner, are used as office room, weighing room, combustion room, stores room. It is provided with water and gas fittings, draft chambers, and drainage for the removal of waste water. It is built in Gothic style with blue stone random khankee facing and white Porebunder stone arches, jambs, etc. There is a teak-boarded and tiled roof and a ridge ventilator, running throughout the length of the building.

Motor Car Shed.

(50′ × 20′)

This Shed is made of Teak posts, corrugated iron sheet and Tandool stone pavements with pits for cleaning purposes.

Students' Quarters:—2 Blocks.

(100′ × 40′)

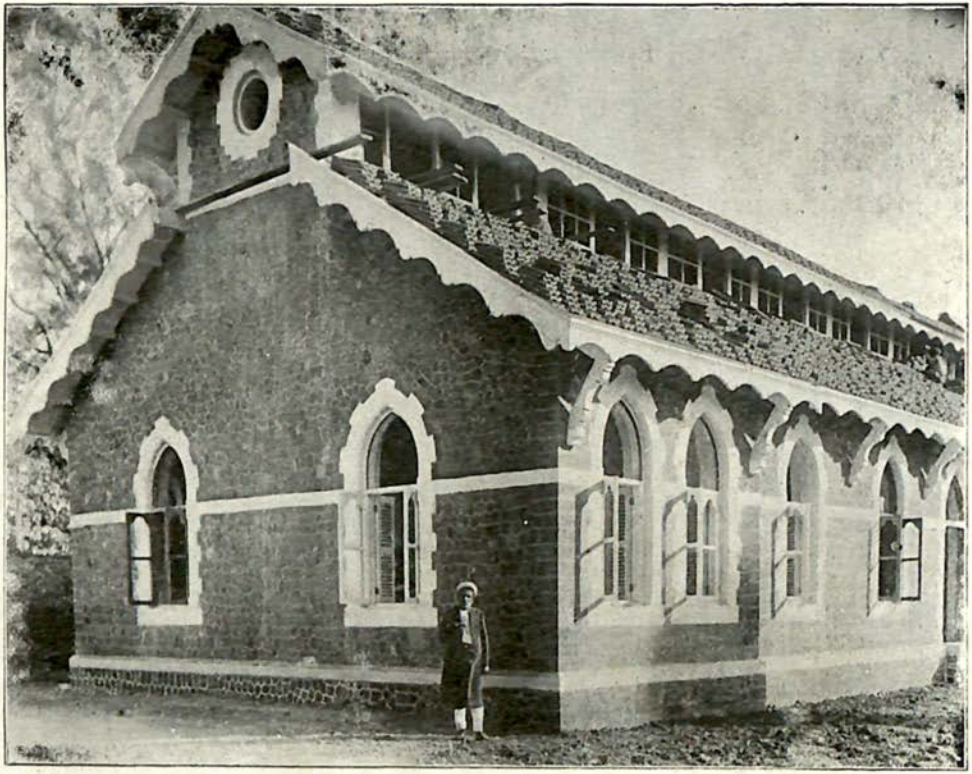
In contradistinction to the other buildings these are built in plain and simple classic style and in its construction reinforced cement concrete has been used throughout. The columns, beams, parapets, arches, floorings, stairs are all made of this material. It consists of the ground floor and three storeys with a Water Closet and Bathing Block in the centre. There are in all 104 rooms accessible from the central corridor and opening on verandahs on both sides. From the point of view of the materials of which it is made this building is the first of its kind in Bombay and was constructed by Messrs. Marsland Price & Co., at the instance of the Hon'ble Mr. G. O. W. Dunn, the Chairman of the Institute.

10

The Principal's Bungalow.

(115′ × 65′)

This is an old house with verandahs all round and a ground floor and a story. On each floor it has a central hall and two large rooms. There are two small rooms at the ends.



THE CHEMICAL LABORATORY BUILDING.

APPENDIX No. 2.

GENERAL REGULATIONS, EQUIPMENT, AND COURSES OF INSTRUCTION.

Victoria Jubilee Technical Institute.

STAFF.

PRINCIPAL.

T. S. DAWSON, Esq.

Mechanical Engineering:

T. S. DAWSON, Esq., Head of the Department.
Mr. S. K. GANDHI, L.M.E., Head Assistant.
" G. P. OGALE,
" U. P. PILLAY,
" R. MUDLIAR,
" R. D. SABNIS, } Fellows.

Physics and Electrical Engineering:

(Vacant) Head of the Department.
Mr. P. W. GREENSTEAD, Head Assistant.
" N. B. PATEL, Assistant.
" B. B. PRADHAN,
" S. S. IYER, } Fellows.

Textile Manufactures:

W. POMPRET, Esq., Head of the Department.
Mr. V. A. FERNANDEZ, L.T.M., Dy. Head of the Dept.
M. P. MOGHE, Fellow.

Technical Chemistry:

A. J. TURNER, Esq., B.Sc. (London), Head of the Departme
J. E. MODY, Esq., M.A., Head Assistant.
Mr. V. B. CHAYYA, B.A., Assistant.

Enamelling:

J. E. MODY, Esq., M.A., Head of the Department.
Mr. V. B. CHAYYA, B.A., Assistant.

Sheet-Metal Drawing:

Mr. JOS. J. D'SOUZA, Superintendent.

Mechanical Drawing:

T. S. DAWSON, Esq., Head of the Department.
Mr. N. A. MALUDKAR, Head Assistant.
" S. K. GANDHI, L.M.E., Assistant.

Motor Car Mechanics:

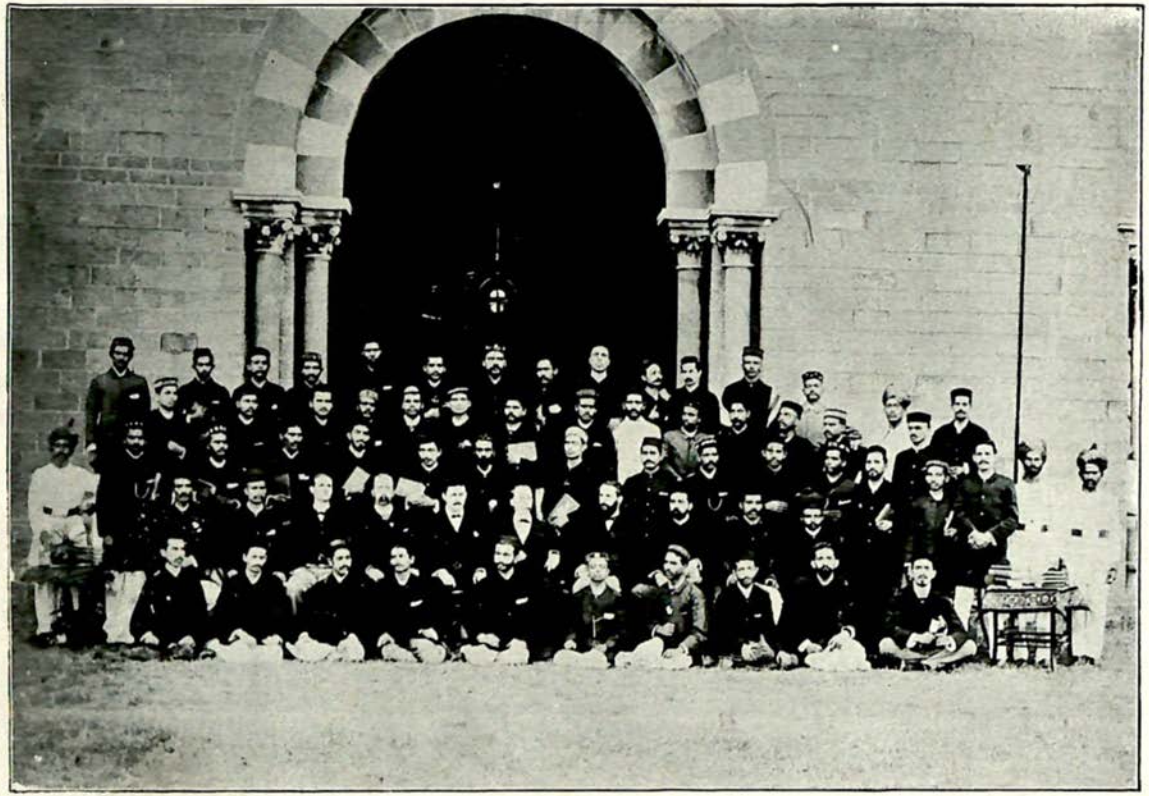
Mr. B. S. JOG, L.M.E., Assistant.

Asstt. Secretary.

RAMKRISHNA M. CHONKAR.

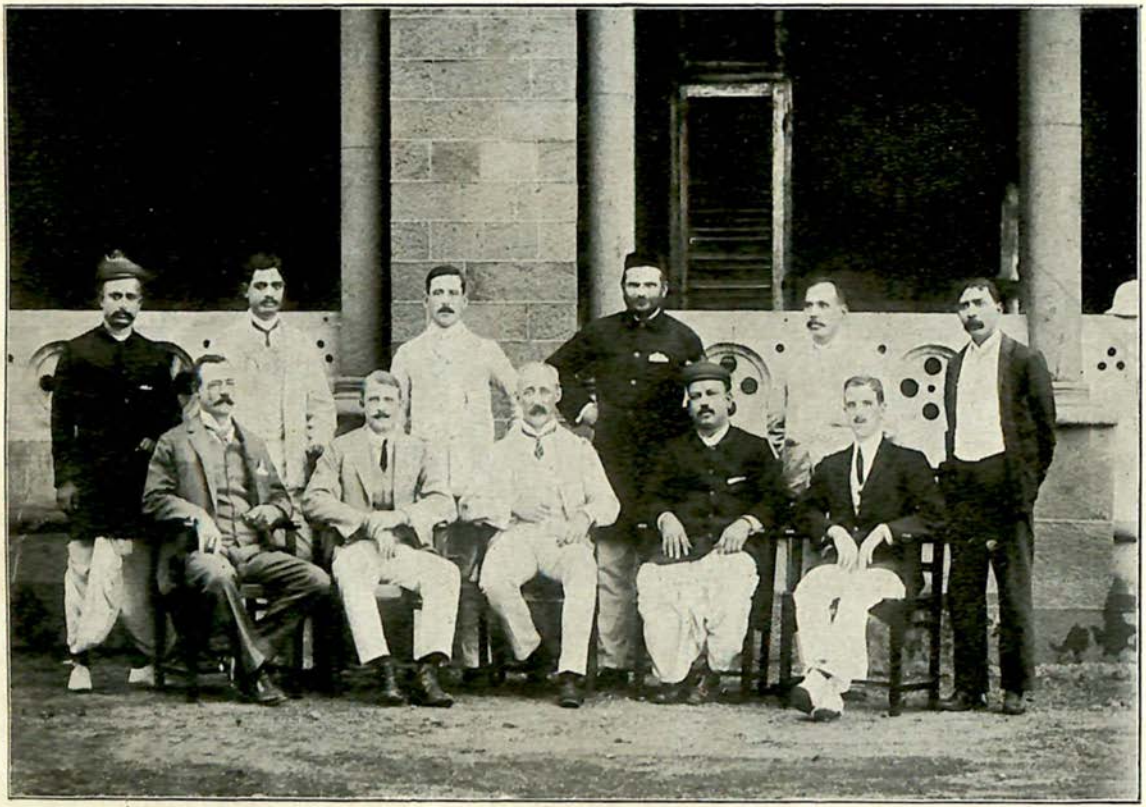
Head Clerk:

Mr. H. R. ARROO.



STAFF WITH MR. PHYTHIAN AS PRINCIPAL.

STAFF WITH MR. MONIE AS PRINCIPAL.



CHIEF MEMBERS OF THE STAFF WITH MR. DAWSON AS PRINCIPAL.

1.—Aim of the Teaching.—The management earnestly desire that the instruction given may be of maximum practical value, but it must be clearly understood that they do not and cannot undertake to teach trades in their class rooms. "Manual skill can only come after long practice, and commercial experience cannot be taught in class rooms." The object of workshop instruction in a Technical School is to give a student the opportunity of handling tools and learning trade processes which he may have no opportunity of doing in modern systems of manufacture owing to the division of labour required therein. He will alse be able te acquire in the School Classes a knowledge of Scientific principles on which the industries in which he is interested are based and in this way be prepared to make faster and more intelligent progress when he enters his profession than he could otherwise do.

2.—Session and Terms.—The Session or year commences about the 10th January and ends about the 15th December. The Session comprises two terms :—

First Term—From January to June.

Second Term—From July to December.

3.—Vacations and Holidays.—There are two vacations: one from the 3rd Saturday in April to the 1st Monday in June, and the other from the 7th October to the 10th November. The Institute is also closed on most of the public holidays, a list of which is published in the Annual Calendar.

4.—Attendance.—The hours of attendance are from 10-30 a.m. to 4-30 p.m. (S. T.) except on Saturdays, when the hours are 10-30 a.m. to 1 p.m. (S. T.). An interval of one hour is allowed for tiffin. A record is kept of the attendance of each student, both at lectures and at workshop practices. In the workshops the time of arrival and departure is noted. To secure the mark of attendance the student must be present at the opening of the

class and remain in it for the whole time the class continues. In all cases of absence a note stating the reason must be sent to the Principal and continued absence must be reported to him at least once a week.

5.—The Courses of Instruction.—The Courses of Instruction are :—

(1) Mechanical Engineering,
(2) Electrical Engineering,
(3) Textile Manufacture,
(4) Technical Chemistry,
(5) Sheet Metal Working and Enamelling ; and
(6) Motor Car Mechanics.

6.—Admission :—The admissions to new Classes are limited to :—60 in Mechanical Engineering,

30 in Electrical Engineering,
30 in Textile Manufacture,
20 in Technical Chemistry and
20 in Sheet Metal Working and Enamelling.

Applications for admission have to be in the prescribed form and in the handwriting of the candidates. No application is registered unless it is accompanied by a certificate signed by a medical man showing that the applicant is above the age of 16 years and is constitutionally sound and a solemn declaration that the applicant possesses the pecuniary ability to complete the course.

The authorties of the Institute are always willing to give advice and to help intending students to choose suitable courses of instruction, but no candidate is allowed to take more than one course at one time.

Except in the case of candidates seeking admission to the Courses in Metal Working Enamelling and in Motor Car Mechanics and of those who have passed the Intermediate or higher examination of any of the Indian or English Universities, admission is by a competetive Entrance Examination held at the end of the first week in January.

7.—Entrance Examination:—No candidate is admitted to this Examination whose name has not been registered three days before the date of the Examination in the list of applicants for admission to the Institute. The examination is conducted in English by means of printed questions papers. There are five papers, each of one hour's duration, viz :—

1	English composition : a short essay on some simple subject	Marks	200
1	Arithmetic, the whole	„	100
1	Algebra, upto quadratee equations ...	„	100
1	Drawing : Copying a sketch from the black board		100
1	Chemistry, as at Bombay Matriculation	„	50

The results of the examination shall be declared within a week from the commencement of the examination by notice put up on the notice board of the Institute, showing the names of the candidates who have obtained at least 25 per cent. of the marks obtainable in each subject, and at least 33 per cent. on the whole. But of these only those who stand highest in the list up to the number of available vacancies shall only be selected for admission. A list of selected candidates shall be put up on the notice board along with the list of successful candidates who may have failed to secure admission to the courses named in their applications, may admitted to other courses in which vacancies are available.

8.—Fees :—The fees are as follows and include the Gymkhana—

Mechanical Engineering Course...Rs. 25 for each of 8 terms.
Electrical Engineering Course ... „ 25 „ „ „
Textile Manufacture Course ... „ 25 „ „ „
Technical Chemistry Course ... „ 30 „ „ „
Enamelling and Metal-Working Course—Rs. 30 for each of two terms.

The latest date for the payment of fees of the first term is January 15th and for the second term June 20th. Students whose fees are not received on these dates are liable to have their names struck off the register.

9.—Books and Tools :—A list with prices of the books and tools which must be possessed by the students is printed in the annual Calendar. Specimens are kept in the Principal's office and uniform editions of books and types of tools are particularly recommended. The list is subject to revision.

10.—Deposit Fee for use of Apparatus :—For the use of more costly apparatus in the Chemistry section a deposit of Rs. 5 is required from each student. It is returned on the apparatus being returned in tact.

11.—Residential quarters :—Dormitories or residential rooms are available for a limited number of students, subject to the following regulations :—

(*a*) Applications for dormitories must be made in the month of December by all who desire to occupy them, whether for the first time or not.

(*b*) In the disposal of the applications, preference will be given to the individual circumstances of the applicants.

THE LIBRARY AND READING ROOM.

(*c*) The rent will be Rs. 18 per term for each of two students in one room and will be payable in advance. A few single rooms will be available at Rs. 24 per term per student.

(*d*) Occupants must arrange for their own cooking and food supplies ; cook houses are provided by the Institute.

(*e*) While in the Dormitories students will be subject to the control of the Dormitory Superintendent under rules framed by the Principal.

(*f*) Misconduct or breach of orders will be severely dealt with.

(*g*) Wilful damage of property will have to be paid for at once.

(*h*) No one except the registered occupants is allowed to reside in the Dormitories.

12.—Library :—The Institute possesses a Library and reading room which is open to students.

The Library is being constantly added to by the supply of the latest works treating of trade, manufacture, and science. It contains at present nearly 1,100 volumes treating of—

Bronzing, Enamelling and Lacquering (including Colour Work on Metals and Woods).
Building Construction.
Carpentry and Wood-working.
Commercial Classes (including Arithmetic, Book-keeping, Shorthand, &c.).
Commercial Products.
Drawing Section (including Drawing for Engineers, Builders, Wood and Metal-workers, &c.).
Electrical Engineering (including Electrical Motor Power and lighting Electro-Metallurgy, &c.).
Encyclopædia, Educators and Dictionaries.
Handicraft Section (including Plumbing, Metal, Wood-working, &c.).
Mechanical Engineering—
Blacksmithing.
Foundry.
Fitting, Pattern-making.
Mechanics including Theoretical, Applied, Graphic, Statics, Hydro-statics, Pneumatics, &c.).
Natural History.
Steam and Steam Engine (including Land, Marine and Locomotive Engines and Boilers).
Tools and Machines for Metal-working.
Metals and the production of Metal (including Iron, Steel, Brass, &c.).
Miscellaneous Industries and Manufactures (including Dyeing, Flour Milling, &c.).

Miscellaneous Volumes.
Oils, Lubricants.
Photography.
Science Section—
Chemistry.
Physics, Laboratory Practice.
Sound, Light and Heat.
Electricity and Magnetism.
Sheet Metal-working (including Sheet Iron, Brass, Copper, Tin, &c.).
Textile Section (including Cotton Manufacture, Wood, Flax, Jute, &c.).
Examination Papers.
Programmes, Syllabuses, &c.
Proceedings of Trade and Art Institutions and Societies.
Periodicals and Journals.

The Library is open from 1-30 to 2 and 5 to 6 P.M. on all days except Saturday and Sunday, when it is open from 2 to 5.

(*a*) Students are not allowed to take any books out of the Library unless—

(1) With the written sanction of the Principal.

(2) After depositing with the Clerk in charge of the Library such sum as may be fixed by the Principal.

(*b*) Books so taken out must be returned within a week.

(*c*) Wilful damage to the property in the Library will have to be at once paid for.

13.—Gymkhana :—There is a Gymkhana which all students are required to join. It provides cricket, hockey, tennis and football and athletic sports are held annually in the beginning of October.

14.—Students' Association :—An association has been formed among students for the exchange of views on subjects of common interest.

15.—Examinations :—At the end of each year students are examined in the different subjects of study.

No student is admitted to any annual examination unless—

(*a*) he has put in during the year at least 75 per cent. of attendances at the lectures given in each subject and in the Workshops and Laboratory ;

(*b*) he produces a certificate from the Head of his Department showing that he has given full satisfaction at the practical exercises given him during the year; and

(*c*) he has paid an Examination Fee of Rs. 10.

100 marks are allowed to each subject of examination and the following is the standard for passing :—

To pass the annual examination the candidate must obtain at least 33 per cent. of the marks obtainable in all the science subjects taken collectively, and at least 40 per cent. of the marks obtainable in all the practice subjects taken collectively, and at least 40 per cent. on the whole, *i.e.*, of all the science and practical subjects taken together. Those who obtain at least 40 per cent. of the marks obtainable in science subjects taken collectively, at least 50 per cent. of the marks obtainable in practice subjects taken collectively and at least 50 per cent. on the whole will be placed in the Second Class, and those who obtain at least 45 per cent. of marks obtainable in science subjects taken collectively, at least 66 per cent. of the marks obtainable in practice subjects taken collectively, and at least 66 per cent. on the whole will be placed in the First Class; but no student will be declared to have passed his annual examination unless, in addition to the percentages for passing, he has been successful in the following specified subjects :—*Mechanical Engineering*—Drawing and Steam; *Electrical Engineering*—Electrical Lectures and Steam; *Textile Manufacture*—Cotton Lectures and Steam; *Technical Chemistry*—Technical Chemistry Lectures and Practice; and *Metal Working and Enamelling*—Metal Working and Enamelling.

The results of examinations are declared by affixing to the notice board a list of the successful candidates arranged in the order of merit.

Those only who pass the First Session Examination are promoted to the Second Session classes ; those only who pass the Second Session Examination are promoted to the Third Session Classes ; those only who pass the Third Session Examination are promoted to the Fourth Session Classes ; and those only who pass the Final Examination are granted a Diploma. Such only of the Final Session students who obtain 40 per cent. of the marks obtainable throughout the course in Science and Practical subjects taken collectively are entitled to a Certificate of the Pass Class ; those who obtain 50 per cent. the Diploma of the Second Class and those who obtain 66 per cent. the Diploma (Honours) of the First Class.

A single certificate is given showing all successes in Science and Practice subjects at each annual examination ; but marks are not given out.

A student who has failed in any of the annual examinations in any Technology may, on payment of a fresh fee, appear for the same examination in any future year, with or without repeating attendance at the Institute, but such student is not entitled to any scholarship, prize or award.

16.—Awards, Scholarships, Prizes, etc.—A number of Scholarships, Prizes, etc., are awarded every year on the results of the annual examinations. Full particulars of these are published in the annual Calendar.

A student cannot take more than one Scholarship, Prize, Medal, or other Award.

A student whose conduct or progress in study is unsatisfactory will be liable at any time to be deprived of his scholarship or other award in whole or in part at the discretion of the Board.

Payments on account of scholarships, &c., will be made half-yearly.

17.—Cost of Study :—The following is a statement of the approximate cost of each Course, exclusive of Boarding and Lodging :—

Mechanical Engineering,	4 years,	...	Rs. 15 per month.
Electrical	4 „	...	„ 15 „
Textile Manufacture	4 „	2 spinning 2 weaving	„ 8 „
Technical Chemistry	4 „	...	„ 15 „
Enamelling and Metal Working	1 year	...	„ 8 „

18.—Freestudentships :—There are a number of freestudentships or Entrance scholarships tenable at the Institute. The Principal notifies at the end of each year the available vacancies for the ensuing year. Full particulars of the freestudentships are published in the annual Calendar.

19.—Change of address :—Every change of address must be immediately communicated to the Principal.

20.—Notice of withdrawal :—Every student wishing to resign must give a term's written notice or pay the fee. This fee may be recovered from the parent or guardian or responsible known person who may have signed the student's admission form.

21.—Disciplinary & other provisions :—Any loss or damage to any property of the Institute has to be at once paid for.

For misbehaviour or breach of the Institute's rules, Students are liable to fine by the Principal or rustication by the Board.

Full discretion rests with the Board to remove, on the recommendation of the Principal, any student who appears to be unlikely to profit by the training. A removal under this rule will imply no reflection on the student's character.

All communications from Students relating to the Institute must be addressed in the first instance to the Principal.

Each student is required to purchase a copy of the Calendar and ignorance of its possesions is no excuse for breaking any of the rules laid down therein.

22.—Rules for Fellowships :—

1. The total number of Fellowships awarded every year are determined by the Board, the number assigned to each branch of Technology being fixed from time to time with due regard to the requirements of each department.

2. The Fellowships (each of the value of Rs. 50 per month) are open to all diploma-holders of the Institute who wish to acquire further practical experience in the Workshops or Laboratories or to attend the higher Technological classes, and are willing at the same time to assist as Tutors in the Institute.

3. The Fellowships are filed up by the Board on consideration of the recommendations made by the Common Room of the Institute. A week before the day of the meeting of the Board in the month of January of each year, the Principal forwards for the consideration of the Board, all applications for the Fellowships received by him, with a short statement of the qualifications of the applicants, and the recommendations of the Common Room.

4. Preference is given, as a rule, to those candidates who obtain their Diplomas during the year for which the Fellowships are awarded. In no case is the Fellowship awarded to any Diploma-holder of more than 3 years' standing.

5. One of two Fellowships in any department (if two are assigned to one department) is awarded for special proficiency in praticial work.

6. No application for a Fellowship is entertained unless it is accompanied by a declaration from the candidate that he is

prepared to serve for the full period of one year. It is, however, in the discretion of the Board to permit Fellows to resign under special circumstances before the expiry of the year.

7. Subject to the conditions of regular attendance, good conduct, and satisfactory progress, the Fellowships are tenable for one year, but it is open to the Common Room, in special cases, to recommend to the Board the re-appointment of a Fellow for the second year. But in no case shall the Fellowships be allowed to be held for more than two years.

8. The stipends of the Fellowships are payable quarterly in arrears.

23.—Boiler Act Examinations.—Under the Rules of the Bombay Boiler Inspection Act, students of this Institute, who have completed a course of *three years* in the Workshops of the Mechanical Engineering Department are allowed to sit for the Third Class Examination, and those who have gained full Technological Certificates in Mechanical Engineering and have obtained one additional year's outside practical experience are entitled to sit for the Second Class examination.

24.—Workshops Certificate.—The three years' workshops certificate mentioned in the previous rule will only be granted to the student who holds a full Technological certificate in Mechanical Engineering.

25.—City and Guilds of London Examinations.—The Institute conducts the City and Guilds of London Institute Examinations each year on behalf of that Institute. The following are the Rules in regard to these examinations :—

(*a*) Examinations are held in the following subjects every year in May, and Certificates and Prizes awarded to successful candidates.

(*b*) The fee for each Examination is Rs. 5.

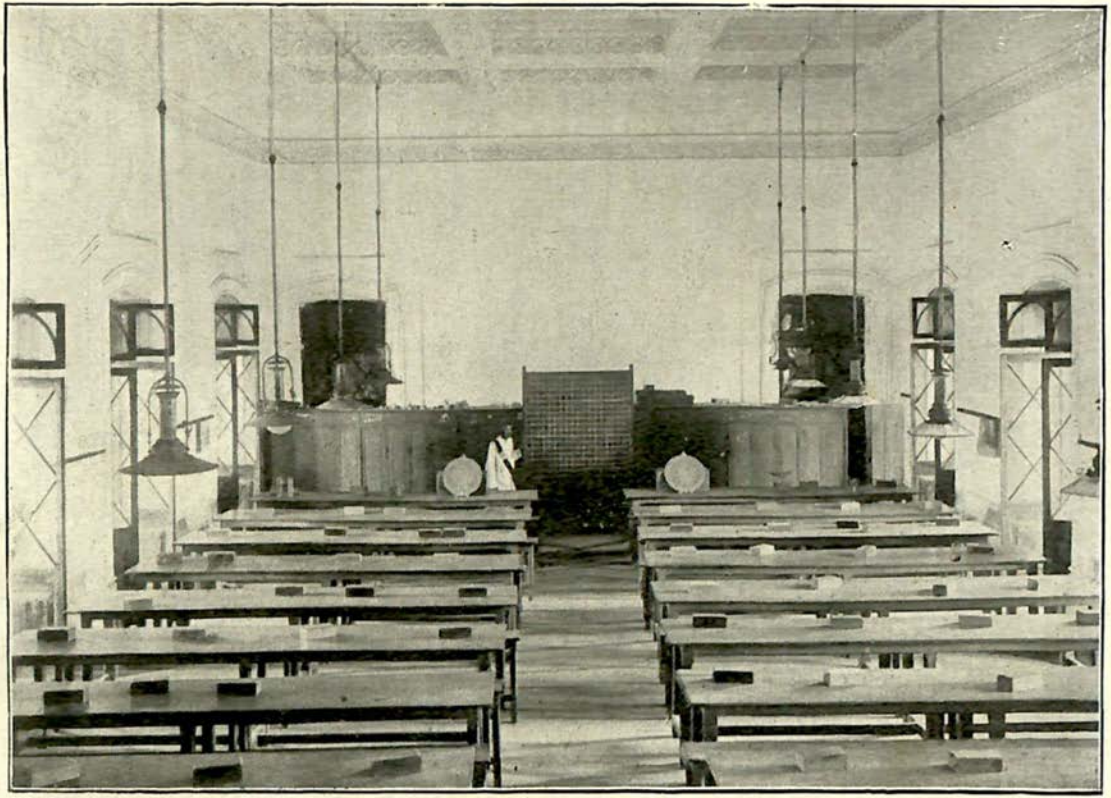
(*c*) Candidates desirous of being examined must send in their application with the fee of Rs. 5 **on or before February 12th.**

(*d*) Subjects of Examination, open to all candidates, whether Students of the Victoria Jubilee Technical Institute or not, are as follows :—

1. Salt Manufacture.
2. Alkali Manufacture.
3. Soap Manufacture.
4. Bread making and Flour Confectionery.
5. Brewing.
6. Spirit Manufacture.
7. Coal Tar Products.
8. Sugar Manufacture.
9. Painters, Oil Colours and Varnishes.
10. Oils and Fats, including Candle Manufacture.
11. Gas Manufacture.
12. Iron and Steel Manufacture.
13. Paper Manufacture.
14. Photography.
15. Pottery and Porcelain.
16. Glass making.
17. Dressing of Skins.
18. Leather Tanning.
19. Boot and Shoe Manufacture.
20. Silk Dyeing.
21. Wood Dyeing.
22. Cotton Dyeing.
23. Cotton and Linen Bleaching.
24. Calico and Linen Printing.
25. Wool and worsted Spinning.
26. Wool and Worsted Weaving and Designing.
27. Cotton Spinning.
28. Cotton Weaving.
29. Flax Spinning.
30. Linen Weaving.
31. Silk Throwing and Spinning.
32. Silk Weaving.
33. Jute Spinning.
34. Jute Weaving.
35. Lace Manufacture.
36. Frame works, Knitting, and Hosiery.
37. Hat Manufacture.
38. Telegraphy and Telephony.
39. Electric Lighting and Power Transmission.
40. Electro Metallurgy, etc.
41. Metal Plate Works.
42. Plumber's Work.
43. Silversmith's Work.
44. Goldsmith's Work.
45. Watch and Clock making.
46. Mechanical Engineering.
47. Road Carriage Building.
48. Rail Carriage Building.
49. Typography.
50. Lithography.
51. Raising and preparation of Ores.
52. Mine Surveying.
53. Slate Quarrying.
54. Carpentry and Joinery.
55. Ship Builders' Work.
56. Boilermakers' Work.
57. Brickwork.
58. Masonry.
59. Plasters' Work.
60. Pointers' and Decorators' Work.
61. Milling (Flour Manufacture).
62. Cabinet-making.
63. Book-binding.
64. Dress making.
65. Millinery.
66. Plain Needle Work.
67. Plain Cookery.
68. Basket Work.

(64–68 For women.)

69. Builders' Quantities.
70. Wheel Wrights Work and Van and Cart Building.
71. Leather Dyeing.
72. Principles of Art in Pattern Designing.
73. Tailors' Cutting.
74. Motor Car Engines and Machinery.



THE MACHINE DRAWING ROOM.

MECHANICAL ENGINEERING.

Course of Instruction.

The course extends over four years. The instruction is both theoretical and practical and is expressly designed to provide a thorough ground-work for students who intend to enter the Mechanical Engineering Profession. The workshop course is arranged with the view of enabling the students to become familiar with the construction and use of the various machines, tools and appliances and the ordinary operations of an Engineering Workshop.

The student begins with the use of the ordinary drawing instruments, the foot rule and inside and outside callipers. From models of parts of machinery he makes free-sketches, putting on his measured dimensions. When these are finished, he settles down to the production of working drawings from which his patterns can be made. The second step is the making of the patterns. The student at first has to commence the usual rough work of the carpenter in planing, sawing to the required sizes, using the chisel, etc., and gradually works on to the making of joints and ultimately of finished patterns ready for the moulding section. In the Moulding Department the student has to dig his own section of sand and rough it generally like an ordinary moulder. His patterns are finally reproduced in the sand moulds and cores until his castings are made ready for machining. Following on to the Smithy Department the student is taught the forming of various tools and appliances to given sizes from rough bars of iron, welding, bending, etc. Here the development of muscle is attended to by the use of the hand and sledge hammers, and this section specially trains him for hard work in the engineering workshops and mills to which he generally looks for employment. The use of the various machine tools such as lathes, boring, planing, shaping, screw-cutting, milling, etc., is the next step prior to the completion of work in the Fitting Department.

The Lecture courses include instruction in Machine Drawing and Design, Applied Mechanics, Steam and Steam Engine, Physics (Heat, Electricity and Magnetism) Practical Mathematics and Chemistry.

Equipment.

In addition to lecture rooms specially fitted for the work of technical instruction, the Department includes a Central Electric Power Station, a Pattermaking shop, a Foundry, a Smithy, a Tools shop, a Lathes shop and a Fitting shop.

The Central Power Station.

The boiler is a gift from Messrs. Babcock and Wilcox, Limited, and is one of their latest type, fitted with superheater and automatic chain grate stoker, the superheater being arranged in such a way that it may be shut out of action, if required, and when this is the case, it forms an additional unit of heating surface.

Considerable care was given to the selection of an engine, which would not only give good results as regard economy, but would also afford means of giving suitable education and training to the students, and it was after very careful consideration of various offers, that the Board of Management were advised to accept the offer of Messrs. Marshall, Sons and Co., Ltd., for one of their coupled compound engines. The engine is capable of giving an economical load of 120 indicated horse power when supplied with steam at a pressure of 150 lbs. per square inch and is sufficiently large to allow for future extensions.

The dynamo or generator is made by the Brush Electric Engineering Co., Ltd., and is one of their standard 4-pole compound wound continuous current machines of 80 K. W. capacity or about 390 amperes at 230 volts. The machine is driven by five

ropes directly from the fly wheel of the engine, the system of driving being by an endless rope, the rope passing from groove to groove successively and returning back to the leading groove over a guide pulley. The driving arrangement was made in the Institute Workshops, and this is probably the first time that this method has been installed in this country.

The Switch Board was constructed in the Institute by the students; and the switches, fuses and measuring instruments made by Messrs. Ferranti, Ltd., of Hollingwood, Manchester, were supplied by Messrs. Greaves, Cotton and Co., on very liberal terms. The switch board is intentionally made much larger than required, so that easy examination and safety may be assured when observations, tests, or alterations are being carried out by the students. This is a point which had to be carefully considered, as some 20 or 30 students will be engaged at one time and the probability of an accident is avoided so far as is humanly possible.

The Pattern-making Shop

is equipped with Benches, Vices, Saws, Grind Stone and sundry tools and there is a collection of patterns of various kinds.

The Foundry

is about 40′ × 25′ and contains moulding boxes of various sizes, shovels, sieves, hand tools, etc. The Cupola is capable of melting 30 cwts of iron at one blow, the necessary blast being provided by a Root's Blower. A core making shop with a floor space of 40′ × 25′ with core benches, stands, irons, etc., together with drying stoves, etc., is attached. Castings are made in iron and aluminum.

The Smithy.

In the Smithy there are 12 double Hearths and anvils, full sets of swages, tongs and other tools. The blast is provided by a power driven fan.

The Machine Tools Shop.

Here there are :—

1 Planing Machine; 1 Radical Drilling Machine; 1 Vertical Boring Machine; 1 Milling Machine; 2 Back Steadies and 3 Dividing Plates; 18 Assorted Milling Cutters; 1 Cutter Founding Machine; Shaping Machine; 1 Stud Making Lathe and Dies; 1 Slotting Machine; 7 Machine Vices; 1 Pillar Drilling Machine; 1 Sensitive Drilling Machine, Twist Drills, Spanners, Drill sockets, etc.

The Lathes Shop.

In the Turning Department there are :—

1—6″ Centre 8 ft. bed lathe.

1—10″ „ 8 ft. „ „

1—7″ „ Hob Chasing lathe.

1—8″ „ 5 ft. bed lathe.

6—Lathes with 2 sets Heads on each.

4—6″ Lathes, self acting feed.

10—Face plates, various sizes;

10—Doz. chucks; 1 self centering chuck; and founders' Spanners, Steadies, etc.

The Fitting Shop.

Here there are Vices, Jacks, Benches, Tables, Plates, Castings, Dies staps, Gauges, Files, Hammers, Chisels, screws, bolts, nuts, plates, etc. There is a Gas Engine and a Compound High Speed Steam Engine for instructional purposes.

TEXTILE MANUFACAURE.

The course in Textile Manufacture extends to 4 years and consists of lectures on spinning and weaving and practical work in the departments of ginning, opening and scutching, carding and drawing, framing, ring-spinning, mule-spinning and reeling, bundling and plain and fancy weaving. Steam, Drawing Mechanics, Physics, Mathematics and Chemistry form the complementary science subjects of the Theoretical course. The examinations include actual work on the machines—re-setting of motions, repairs, erection, etc., and are conducted by qualified outside Examiners. The proposed introduction of the sub-departments of sizing, bleaching and finishing in connection with the Textile Department, while increasing the scope of usefulness, is a development calculated to be of considerable benefit to the students of this section.

The Equipment includes :—

1 Kala or pod-opening and separating machine.

1 40-in. single roller, double acting Macarthy ginning machine.

1 Roller and beater bale breaker, with elevating lattice and shoot.

1 Combined exhaust opener and scutcher with pneumatic tube, trunks, etc., opener beater of porcupine construction, and scutcher makes 45 in. laps.

1 Finisher, 3-bladed single beater scutcher for 45 in. laps.

1 Revolving flat carding engine, 45 in. on wire, with patent flat grinding apparatus.

1 Roller and clearer carding engine, 48 in. on wire.

1 Set of grinding rollers, burnishing brushes.

1 Drawing frame, 3 heads of 6 deliveries, 18 in. staff.

1 Do. 2 heads of 2 deliveries, 18 in. staff.

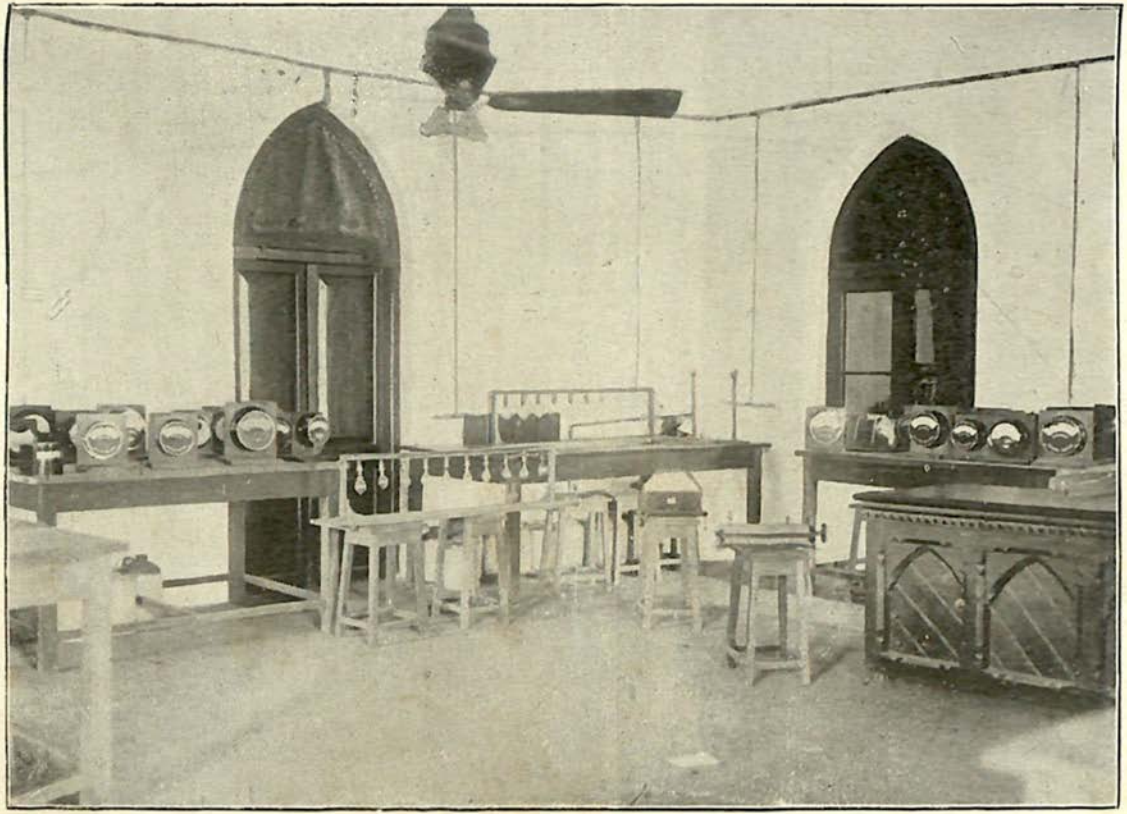
1 Slubbing frame, 30 spindles, 20½ in. guage, long collars.
1 Do. 48 do. 20 in. do. short do.
1 Intermediate frame, 46 spindles, 19¾ in. gauge, long collars.
1 Roving frame, 60 spindles, 20½ in. gauge, long collars.
1 Ring frame (weft), 2¼ in. gauge, 140 spindles.
1 S. A. Mule (twist), 1¾ in. gauge, 132 spindles, stretch 64in.
Wrap blocks, wrap reels, testing machines, etc.
2 40-hank single reeling machines.
1 10-hank do. machine for plain and cross reeling.
1 10-lb. bundling press.
1 Plain loom overpick, 40 in. loose reed.
1 Do. underpick, 40 in. fast reed.
1 600 jacquard loom, 40 in. loose reed with 5 drop boxes.
1 25 shaft dobbie.
1 Towel motion Plain Loom.

Drum and Pirn winding machines, Warping, Sizing and Bleaching Machines, a self-acting Loom, and a complete set of testing, weighing, bundling and grinding apparatus. The power is provided by a 20 Brake House Power Lister Motor.

A complete mill plant with tools for the covering of top rollers with flannel and leather which are used for the work of the machines in the school.

ELECTRICAL ENGINEERING AND PHYSICS.

The course has been laid down with the prime object of making the students think and decide for themselves under all conditions and at the same time making them efficient workmen. The course extends over 4 years.



CORNER OF ELECTRICAL LABORATORY.

ELECTRICAL ENGINEERING.

The study commences with the investigation of the electric circuit, both theoretically and practically, the students all experimentally proving the various laws concerned. The measurement of electrical current, pressure, resistance and power are next dealt with and the students make actual measurements of all these quantities, and calibrate the various instruments required. The generation of the current follows next with a study of the principles of construction, methods of driving, testing and use of dynamos. Exercises in winding are also given to train the students in the methods of carrying out the repairs likely to be required in actual practice. The various applications of the current are next taken up with the theory and practice of wiring of mills and other buildings for light and power, the students having exercises in the various methods of joining and insulating the cables used. Arc and incandescent lamps and machines using electric current as motors and transformers are also studied and tested practically under varying conditions.

Special attention is also devoted to the Mechanical training of the Electrical Students in Fitting, Turning, Pattern-making and the control of steam, gas and oil Engines and an additional course is about to be introduced comprising complete tests of the Central Power Station Plant.

The present lecture courses for Electrical Students include the subjects of Steam, Applied Mechanics, Drawing, Practical Mathematics and Chemistry.

The Equipment.

The Electrical Laboratory contains amongst others:— Adjustable resistances, Arc lamps, Seam's Brake, Bemsen's photometer, Ceiling fan, 4 blades, E. P. S. and other Cells, Various coils and Reels, Contact Keys, Cut outs, Desk fan, Distribution Boards, Siemen's Dynamometer, I. P. Hall's Shunt Wound 100^{v} Dynamo, 1 H. P. coupled to Aston Motor, Motor-dynamo 100^{v}, 1 H. P. Aston Scrups-Motor, 1 Shunt Wound

Ediswan Motor, 11 H. P. Union Electric Co's. Shunt Wound Motor, 1 Three phase Motor, Incandescent Lamps, various ammeters, Ballister Galvanometer, Ayston and Masher's Galvanometers, Kelvin's Galvanometers, Hartman and Boun's Galvanometer, Lord Kelvin's balance, Various Vortmeters, Wattmeters, Ohmmeters, Genrators, Wright's Demand Indicator, Potentiometer, Switches, Transformers, etc., etc. A well selected assortment of scientific apparatus for research work is also available.

Technical Chemistry.

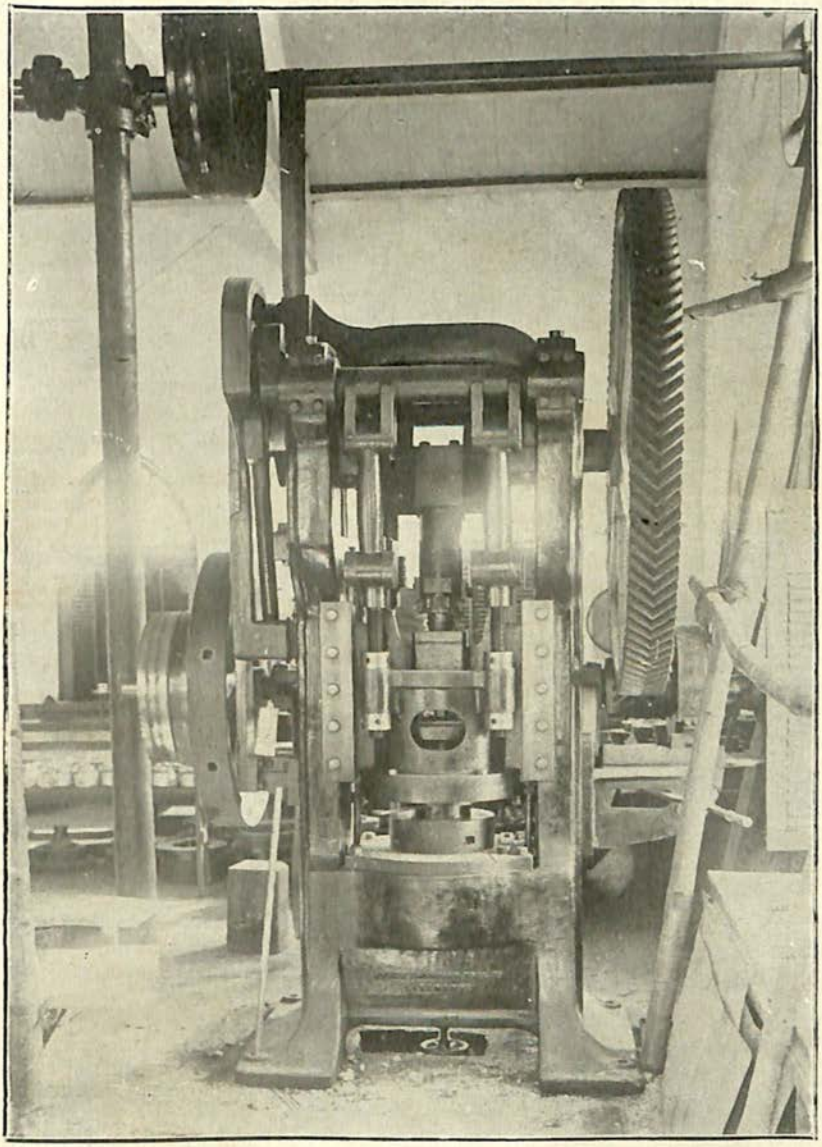
This course extends to four years and comprises instruction in Machine Drawing, Applied Mechanics, Steam and the Steam Engine, Physics (Heat, Electricity and Magnetism), Physics, Laboratory Practice, Cotton, Chemistry, General and Organic, and Chemistry of Bleaching, Sizing and Finishing, and Dyeing, Laboratory, and Workshop Practice.

There is a spacious Laboratory specially fitted for Chemical work connected with the Textile Industry and Dyeing, Sizing, Bleaching, etc., in particular.

Sheet-Metal Working and Enamelling Course.—This Course extends to one year and comprises instruction in Drawing, Stencil-cutting, Chemistry, Chemistry of Enamels, the mixing and applying of Enamels, Fusing Enamels on iron plates and Hollow-ware, Stamping, Drawing, Punching, Cutting, Burnishing and Polishing Sheet Metal, etc.

The equipment of the Metal Working Department includes:— 1 Drawing and Stamping Press, 1 Spinning Lathe, 1 Adjustable power press, 1 Power Punching press, Circular Shearing Machine, Burnishing Lathes, Punches, Dies and Blank holders of various kinds, etc., etc. The equipment of the Enamelling Department includes Fusing Furnace, Muffles, Grinding Mills, Crucibles, Rebits, Brushes, etc.

Motor Car Mechanics.—There are two complete up-to-date cars with dual ignition, complete sets of tools for overhauling work, vulcanizer, coils, batteries, magnetos and models for instructional purposes. Cars are also received from the trade for adjustment and repair.



THE METAL STAMPING PRESS.

APPENDIX No. 3.

FREESTUDENTSHIPS, SCHOLARSHIPS AND PRIZES.

STUDENTSHIPS AND SCHOLARSHIPS.

Four Sir Dinshaw Manockji Petit Free-Studentships for Parsee students :—

Each of the value of the Students' Annual Fees, Books and Instruments, and each tenable for three years; to be awarded to four (4) Parsee students, who may be poor and unable to pay the fee and to whom books and instruments will be supplied free of charge from the fund, so far as possible.

The holders may choose any technology.

The selection of the candidates for the Free-Studentships is made by Mr. Bomanjee Dinshaw Petit.

Three Joshua King Scholarships.

Each of the value of about Rs. 105 per annum, usually tenable for three years.

For the three Scholarships all persons shall be eligible whose fathers are, or were, *bona fide* handicraftsmen residing in the districts of Ahmedabad or Kaira, Ahmednagar and Satara; but Ahmedabad and Kaira shall be held to be one district for the purposes of this endowment, and as a rule only one Scholarship shall be allotted to each district, *viz.*, one to the joint Gujrat Collectorates, one to Ahmednagar, and one to Satara.

By "*bona fide* handicraftsmen" is intended men who are themselves exercising the nobler mechanical arts, or who were doing so at the time of their death, if deceased, unless hindered therefrom by infirmity.

The final appointment of scholars will be made by the Board on the recommendation of the Collectors of the districts concerned. As a rule candidates will be selected from Ahmedabad and Kaira alternately.

Six Tapidas Free-Studentships for Hindus.

Two First Session,

Two Second Session, and

Two Third and last Session,

each of the value of the Annual Fees, to be awarded to Hindu candidates.

One Free-Studentship in each Session to be awarded to—

A student in the Mechanical Engineering Branch, and the other to—

A student in the Cotton Spinning Branch.

One Abdoola Hajee Dawood Free-Studentship of the value of the student's annual fees, with necessary books and instruments, tenable for three years, to be awarded to a Mahomedan candidate only.

The nomination of candidates rests in thn hands of Mr. Abdoola Hajee Dawood during his life; after his decease, with the Committee of the Anjuman-i-Islam Madressa of Bombay; failing appointment by them, by the Board of the Institute.

The holder may choose any technology.

One Maharao Khengarji Free-Studentship of the value of about Rs. 100 per annum, to be awarded once in every three years or whenever vacant, in accordance with the following Regulations :—

Candidates who are subjects of His Highness the Rao of Kutch are to be nominated by the Political Agent, Cutch, the appointment to be made by the Board of the Institute; failing such nomination the Board may appoint a candidate born and resident in the Bombay Presidency, including the Native States.

One Manibhai Cutch Scholarship.

The Scholarship of the value of Rs. 20 per mensem will be awarded by the Bombay University in accordance with regulations in the University Calendar.

Amir Ali Murad Scholarships.

These Scholarships have been founded by His Highness Mir Faiz Muhammad of Khairpur in memory of his father, His Highness the late Amir Sir Ali Murad, G.C.I.E., of Khairpur, for the encouragement of higher education amongst the Mussulman population of Sind, and are called Amir Sir Ali Murad Scholarships.

The Scholarships are open to all Mahomedans born or domiciled in Sind.

The Scholarships shall be tenable by undergraduates attending any of the courses prescribed by the Bombay University, THE VICTORIA JUBILEE TECHNICAL INSTITUTE at Bombay, and the Dayaram Jethmal Sind College, especially the B.A. at Karachi, the LL.B. at Karachi or Bombay, the L. M. & S. at Bombay, the L. M. E. or L. T. M. at the Victoria Jubilee Technical Institute course at Bombay, the L. C. E. at Poona.

All Scholarships tenable at Sind shall be of the annual value of Rs. 300; those tenable only at Bombay or Poona shall be of the annual value of Rs. 360.

The Scholarships shall ordinarily be tenable for a period not exceeding four years.

The fund at present admits of the foundation of seven Scholarships.

Applications for Scholarships must be made before the 1st of January in each year to the Educational Inspector in Sind, from whom printed forms of applications Form A.) are obtainable.

In case of more applications than one, it shall be open to the Committee to award the Scholarships by competitive examination, but this shall not be compulsory.

The following **Scholarships, Prizes,** etc., are available for award each year on the standing of the students at the annual examinations :—

The Nowrozjee Furdunjee Fee Prizes.

Three Fee Prizes to be awarded to three "poor deserving" candidates who have been in regular attendance during their first (1) Session and pass the first (1) Session Examination for the prescribed course of Tehnological Cotton Manufacture in connection with the Ripon Textile School, with the complementary Science subjects, in the order of merit.

The Nowrozjee Furdunjee First Scholarship.

The First Scholarship of the value of about Rs. 45 to the student who attains the second rank in the annual examination to be held in connection with the Ripon Textile School Class: the students who has been in regular attendance during his first (1) Session and passes the first (1) Session Examination for the prescribed course of Technological Cotton Manufacture in connection with the Ripon Textile School, with the complementary Science subjects, and gains the highest aggregate number of marks for that Session.

The Ripon Prize.

The Ripon Prize, of the value of about Rs. 45, may be awarded annually to a successful Parsee student who has been in regular attendance during one (1) Session and passes the first Session Examination for the prescribed course of Technological Cotton Manufacture, with the complementary Science subjects, and gains the highest aggregate number of marks for that Session.

The Lord Reay Scholarship.

The Lord Reay Scholarship, of the value of about Rs. 90, to be awarded " to the student who, at the examination held at the end of his first (1st) year, shows himself to have profited by the instruction therein imparted by securing the largest number of marks " for the prescribed course of Technological Cotton Manufacture, with the complementary Science subjects, or for any prescribed course of Technology, with the complementary Science subjects, taught in the Institute. To be awarded to the student in Technological Cotton Manufacture if he be above the one who obtains the third place in the aggregate number of marks in any prescribed course of Technology.

The Professor Henry Fawcett Scholarship.

The Professor Henry Fawcett Scholarship, of the value of about Rs. 140, to be awarded to the candidate who has been in regular attendance during his first (1st) Session and passes the first (1st) Session Examination for the prescribed course of Technological Mechanical Engineering with the complementary Science subjects, and gains the highest aggregate number of marks for that Session.

The Nowrozjee Furdunjee Fee Prizes.

Two Fee Prizes, to be awarded to two "poor, deserving" candidates who have been in regular attendance during two (2) Sessions only and pass the second (2nd) Session Examination for the prescribed course of Technological Cotton Manufacture in connection with the Ripon Textile School, with the complementary Science subjects, in the order of merit.

The Nowrojee Furdunjee Second Scholarship of the value of about

Rs. 90, to be awarded to the student of the Ripon Textile School who attains the first rank in the Weaving, Carding or Spinning, or any other Department: the student who has been in regular

attendance during his second (2nd) Session at the Victoria Jubilee Technical Institute, and passes the second (2nd) Session Examination for the prescribed course of Technological Cotton Manufacture in connection with the Ripon Textile School, with the complementary Science subjects and gains the highest aggregate number of marks for that Session.

The Govindji Thackersy Mulji Scholarship, of the value of about Rs. 60, to be awarded at the discretion of the Board to the student of the Ripon Textile School who passes the second (2) Session Examination and obtains the highest number of marks in Carding and Spinning.

The Vurjdas Atmaram Prize.

The Vurjdas Atmarrm Prize, of the value of Rs. 24, may be awarded at the discretion of the Board to the student who has been in regular attendance during two (2) Sessions only and passes the second (2nd) Session Examination for the prescribed course of Technological Mechanical Engineering, with the complementary Science subjects, and gains the highest aggregate number of marks for that Session.

The Mechanical Drawing Prize.

The Mechanical Drawing Prize, of the value of Rs. 30, may be given at the discretion of the Board to the student who has been in regular attendance during two (2) Sessions only and passes the (2nd) Session Examination for Machine Drawing, also passes in four Departments of Practice for the prescribed course of Technological Mechanical Engineering and gains the highest aggregate number of marks, calculated by adding a moiety ($\frac{1}{2}$) of the marks gained for Practice in the first and second Sessions to the marks gained for Machine Drawing in the Second Session.

The Dr. H. Cook Prize.

The Dr. H. Cook Prize, of the value of Rs. 30, may be awarded at the discretion of the Board, to the student who has been in regular attendance during two (2) Sessions only and passes the second (2nd) Session Examination for the prescribed course of Science and Technological Lecture subjects only, and gains the highest aggregate number of marks for the Session only in these subjects.

The Dwarkadas Vasanji Scholarship.

The Dwarkadas Vasanji Scholarship, of the value of Rs. 90, to be awarded to any one of the best native (Hindus, Parsees and Mahomedans only) student who has been in regular attendance during two (2) Sessions at the Sir J. J. Mechanical Engineering School or the Ripon Textile School or the Electrical Engineering School and passes the second (2nd) Session Examination for the prescribed course of Technological Mechanical Engineering or Cotton Manufacture or Electrical Engineering, with the complementary Science subjects, and gains the highest aggregate number of marks for that Session only.

The Maharao Khengarji First Scholarship, of the value of Rs. 105, to be awarded to the candidate born and resident in the Bombay Presidency, including the Native States, who has been in regular attendance during the first (1st) Session and has passed the (1st) Session Examination for the prescribed course of *any* Technological subject, with the complementary Science subjects, taught in the Institute, and gained the highest aggregate number of marks for that Session.

The Maharao Khengarji Second Scholarship, of the value of Rs. 110, to be awarded to the candidate born and resident in the Bombay Presidency, including the Native States, who has been in regular attendance during his second (2nd) Session and has passed the 2nd (2nd) Session Examination

for the prescribed course of any Technological subjects, with the complementary Science subjects taught in the Institute, and gained the highest aggregate number of marks for that Session.

The Lord Reay Gold Medal.

The Lord Reay Gold Medal, of the value of about Rs. 80, to be awarded to the student who has been in regular attendance for three (3) Sessions only and passes the third (3rd) Session Examination in any prescribed course of Technology, with the complementary Science subjects, and gains the highest aggregate number of marks for that Session, calculated for Science subjects in proportion to the Class work.

APPENDIX No. 4.

LIST OF PASSED STUDENTS

1887-1907,

AND

STATISTICS OF EMPLOYMENT

collected in 1904.

LIST OF PASSED STUDENTS,

(Arranged alphabetically.)

L. M. E.—Licentiate of Mechanical Engineering.
L. T. M.— „ Textile Manufacture.
L. E. E.— „ Electrical Engineering.
II —Second Class Full Technological Certificate.
P —Pass „ „ „
m —Mechanical Engineering.
t —Textile Manufacture.
e —Electrical Engineering.

Achyut N. G.	II m	1905
Adhiya D. H.	II e	1907
Adrianvala K. P.	L. M. E.	1901
Afzuluddin M.	II e	1907
Agrekar V. R.	II t	1894
Ahmedi I. M. A.	II	1894
Aiyangar K. V.	II e	1907
Aiyer S. V.	L. M. E.	1896
Aiyer T. V.	L. E. E.	1907
Aiyer V. S.	II m	1904
Ajgaokar G. D.	P e	1907
Albequerque R.	II m	1894
Alvers M. F.	II m	1896
„ „	L. T. M.	1897
Ambdeker P. P.	P m	1907
Amin C. B.	L. M. E.	1891
Amin C. M.	II m	1891
Amin D. N.	L. M. E.	1893
Amin J. L.	L. M. E.	1891
Anal S. D.	II m	1907
Anadraj D. E.	II m	1905
Anklesaria J. A.	II m	1905
Anklesaria K. T.	L. M. E.	1891
Appaduri F. S.	L. M. E.	1907
Applachar M. P.	II m	1905
Apte D. G.	L. M. E.	1901
Apte K. K.	II m	1904
Apte K. V.	II m	1893
Aushtputre M. V.	L. M. E.	1906
„ „	L. T. M.	1904
Athalye G. G.	L. M. E.	1891
Athavale S. C.	II m	1895
Athavale V. P.	II t	1891
Atmaram Bukhanvala C. G.	II m	1894
„ M. C.	L. T. M.	1896
Ayyor D. V.	L. M. E.	1907
Balsara V. M.	P m	1906
Banajee H. F.	L. M. E.	1898
Banajee J. M.	II e	1907
Bandravala A. F.	II m	1906
Bangerson A. J.	II e	1905
Bannerjee M. A.	II m	1894
„ „	L. M. E.	1895
Bapat V. C.	L. M. E.	1901
Bapat V. N.	L. M. E.	1891
Bapaya B. H.	II m	1892
Baptist P. A.	L. T. M.	1898
Barrett H. A.	L. T. M.	1896
Barretto M	II m	1897
Basak M. N.	L. T. M.	1907
Bathejor J. H.	L. M. E.	1891
Batliwala E. D.	II m	1904
Belsare K. M.	II m	1906
Bengalee C. F.	II m	1903
Bhagwat L. B.	L. M. E.	1898
	L. T. M.	1900
Bhagwat M. D.	L. M. E.	1904
Bhagwat M. N.	P m	1906
Bhandare D. R.	L. T M.	1900
Bhappu C. C.	L. M. E.	1891
Bhargawa P. S.	L. M. E.	1907
Bharucha F. E.	L. M. E.	1891
Bharucha H. S.	II t	1893
	L. M. E.	1891

Bhatavdekar W. H.	L. M. E.	1899
Bhatt K. J.	L. T. M.	1898
Bhatt N. T.	L. M. E.	1892
	II m	1891
Bhogwani J. D.	L. M. E.	1891
Billimora P. N.	P e	1905
	II m	1904
" "	P t	1900
Billimora S. D.	L. M. E.	1900
Birji M. B.	P m	1901
Borude D. N.	L. M. E.	1891
Bottlewalla R. F.	II m	1907
Burhanpurkar M. T.		
Campos L. P.	L. M. E.	1895
Cardmaster B. S.	II e	1907
Challa L. N.	L. M. E.	1906
Chavan B. G.	L. M. E.	1899
Chepe G. B.	L. M. E.	1898
	L. T. M.	1900
Cherian P.	II. m	1907
Chichgur P. E.	II m	1905
	II e	1907
Chinchore R. R.	L. M. E.	1891
Chitnis B. S.	II m	1904
Choksi A. K.	L. M. E.	1891
Chowdhari G. H.	L. M. E.	1891
	II t	1893
Chowdhari M. R.	L. M. E.	1904
Chowory G. C.	II m	1894
	L. M. E.	1895
Commissariatvala B. F.	L. M. E.	1891
Contractor C. M.	L. T. M.	1902
Contractor H. F.	II m	1906
Costa A. A.	II m	1894
Cowsick V. R.	II m	1903
Dhabholkar G. G.	II m	1901
DaCosta A. A. S.	L. T. M.	1906
	II t	1905
Dadiburjor H. D.	L. M. E.	1902
Dage M. C.	II m	1898
Dalal M. V.	II m	1891
Dalvi Y. S.	L. T. M.	1894
Damle L. G.	II m	1907
Dandekar K. G.	II t	1905
Dandekar P. V.	L. M. E.	1902
Dandekar S. V.	L. M. E.	1904
Dandekar V. V.	L. M. E.	1903
Dandekar Y. J.	L. M. E.	1903
Dandge N. A.	L. M. E.	1904
Daruwalla J. F.	L. M. E.	1991
Dass S. P.	L. M. E.	1907
Dastur H. F.	L. M. E.	1891
Date S. V.	L. M. E.	1907
Dave D. K.	L. T. M.	1895
Dave I. P.	L. M. E.	1898
Dave M. A.	II m	1905
	II e	1907
David Y. S.	L. M. E.	1907
De Faria E. G.	II m	1896
Deodhar G. N.	L. T. M.	1891
Desai B. B.	L. T. M.	1900
Desai C. K.	II m	1906
Desai Ch. K.	L. T. M.	1901
	II m	1899
Desai C. R.	L. M. E.	1891
Desai D. B.	II m	1891
Desai G. B.	II m	1891
Desai H. N.	II m	1891
Desai K. P.	L. M. E.	1891
Desai M. N.	L. T. M.	1903
Deshpande B. R.	II m	1907
Dewal H. V.	II m	1892
Dewal H. V.	II m	1891
Dhabliwala N. P.	L. M. E.	1892
Dhairyawan S. N.	II m	1896
Dhaneshwar W. G.	L. M. E.	1900
Dharadhar L. G.	II m	1893
Dhebar J. R.	II m	1892
Dhotre S. M.	L. M. E.	1891
Dhru P. K.	L. M. E.	1891
Dighe S. M.	L. T. M.	1901
	L. M. E.	1903
Dixit B. S.	L. T. M.	1894
Dixit V. G.	L. T. M.	1891
Driver R. H.	II m	1907
Dronkar N. B.	II m	1904
D'Silva F. J.	L. M. E.	1892
	II m	1891
D'Souza F. N.	L. M. E.	1896
D'Souza Francis	II t	1906
D'Souza J. A.	L. M. E.	1893
D'Souza J. L.	L. M. E.	1902
D'Souza J. P.	L. M. E.	1902
D'Souza L. C.	L. M. E.	1896
D'Souza L. M.	II m	1897
D'Souza P. F.	II m	1899
D'Souza T.	L. M. E.	1900
Dubal M. G.	L. M. E.	1892
Dubash A. N.	II m	1905
Dubash B. S.	P e	1907
Dubash S. J.	L. M. E.	1895
Dube L. S.	II m	1905
Dubash S. D.	L. T. M.	1897
Dutt G. N.	L. M. E.	1897
Edibam B. P.	II e	1907
Eliaja S. B.	L. M. E.	1902
Engineer R. A.	L. M. E.	1891
Engineer H. M.	II m	1893
Engineer M. N.	II t	1892

Engineer P. R.	II m	1904
Engineer S. R.	II e	1907
Esparance M. F.	II m	1900
Fernandez B. A.	II m	1904
Fernandez V. A.	L. T. M.	1891
Fonseca C. G.	II m	1900
Furtado L. F.	II t	1907
Gadgil G. T.	L. M. E.	1903
Gadre D. V.	II m	1906
Gaffer M. A.	II m	1907
Gagrat A. M.	L. M. E.	1892
	II t	1894
Gazdar D. S.	P. m	1905
Gazdar M. A.	II e	1905
Gazdar R. N.	II e	1907
Gazdar R. A.	II m	1901
Gazdar S. M.	P m	1906
Gazdar S. B.	L. T. M.	1891
Gazdar S. S.	II m	1895
Gair D. A.	II m	1896
	L. M. E.	1898
Gajjar G. R.	L. M. E.	1901
Gandhi S. K.	L. M. E.	1893
Gandhi S. R.	L. M. E.	1891
Gandhi M. P.	II t	1906
Ganla S. B.	L. M. E.	1892
	II m	1891
Ghadiali J. P.	II t	1898
Ghaskabdi A. V.	L. M. E.	1898
	L. T. M.	1906
Gheewalla N. N.	II m	1892
Gidwani A. T.	II m	1904
Gidwani C. K.	P m	1906
Girmajee G. S.	L. E. E.	1907
Godbole M. N.	L. M. E.	1895
Gokhale G. N.	L. M. E.	1891
Golatkar B. A.	II t	1907
Golwala J. B.	L. T. M.	1891
Golwalkar S. N.	L. M. E.	1900
Gomes B.	II m	1896
Gore P. M.	II m	1906
Gossein J. C.	P e	1907
Gowda C. R.	L. E. E.	1907
Gowda H. L.	II e	1907
Gupte S. W.	L. M. E.	1903
Gurjar M. D.	L. E. E.	1907
Gurjar R. V.	L. T. M.	1903
Hakschar P. S. N.	L. M. E.	1903
Hanumania D. M.	L. T. M.	1891
Hatalkar S. A.	P m	1895
Hathiangadi M. R.	L. T. M	1907
Hindia G. D.	L. M. E.	1892
Hoogwerf E. F.	L. M. E.	1895
	L. T. M.	1897
Hunt R. J.	II m	1892
Hurst A. E.	L. T. M.	1902
Irani J. B.	L. E. E.	1906
Iyengar R. R.	II m	1898
Iyengar S. B.	II e	1904
Iyer R. M.	II m	1905
Iyer S. S.	L. E. E.	1907
Jacob A.	II m	1907
Jambhekar B. K.	L. M. E.	1904
Jambhekar M. B.	II m	1906
Jamkhindikar N. V.	P m	1906
Jassawalla N. A.	L. M. E.	1892
Javahiri R. V.	II m	1894
Jaya L. R.	L. M. E.	1900
Jaya S. S.	L. M. E.	1900
Jayakar S. B.	L. M. E.	1906
Jayakar Y. A.	II m	1903
Jijina N. B.	L. T. M.	1896
	L. M. E.	1894
Jog B. S.	L. M. E.	1902
Jog R. S.	II m	1905
Joshi B. E.	II t	1900
Joshi D. V.	P e	1905
Joshi G. B.	II m	1899
Joshi G. G.	P e	1906
Joshi G. L.	L. T. M.	1905
Joshi H. N.	II m	1891
Joshi S. S.	P m	1905
Jusufkhan A. A.	L. M. E.	1896
Kadaba K. T.	L. E. E.	1907
Kalamdani S. R.	L. M. E.	1891
Kalevar V. A.	L. M. E.	1897
Kama S. R.	L. M. E.	1898
Kama Surrosh K. R.	L. T. M.	1893
Kamalakar V. G.	L. M. E.	1891
Kane G. V.	L. T. M.	1907
Kantak G. B.	L. M. E.	1891
Kanthariakar M. B.	II m	1896
Kapadia A. D.	L. T. M.	1902
Kapadia M. B.	L. M. E.	1891
Kapadia P. S.	II m	1897
Karaka M. C.	L. M. E.	1891
Karani N. P.	L. M. E.	1891
Karia J. H.	L. T. M.	1894
Kardile S. A.	II m	1907
Karkhanis R. T.	L. M. E.	1904
Katdare G. B.	II m	1899
Katre S. S.	L. M. E.	1895

Kaul I. K.	L. M. E. / L. E. E.	1906
Kavatekar R. G.	II t	1907
Kavre B. V.	L. M. E.	1902
Kelkar K. G.	L. M. E.	1899
Kelkar K. S.	L. M. E.	1895
Kelkar S. W.	II m	1898
Kerawalla J. F.	L. M. E.	1900
Ketkar B. C.	L. M. E.	1891
Khambatta R. H.	II e	1905
Khanna Motiram	L. T. M.	1906
Khanna R. K.	II m	1906
Khanna Shrikrishna	II m	1906
Kher M. V.	II m	1900
Khory R. N.	II m	1904
Kinkhabwala J. G.	L. M. E.	1891
Kinkhabwala N. G.	L. T. M.	1891
Kirtikar D. V.	II e	1905
Kola B. K.	L. M. E.	1899
Kola H. M.	L. T. M.	1894
Kolatkar G. V.	L. M. E.	1891
Kolhatkar S. S.	L. T. M.	1900
Kothare A. B.	L. M. E.	1900
Kothare G. M.	L. M. E. / L. T. M.	1902 / 1900
Kothare G. R.	L. M. E.	1891
Kothare S. M.	II m	1905
Kothawala R. E.	L. M. E.	1893
Kotibhasker N. G.	II m	1907
Kotwal N. D.	II m	1892
Kotwal R. H.	L. T. M.	1904
Kotwal R. S.	II m	1902
Kshirsagar H.	L. M. E.	1905
Kukana K. F.	II t	1906
Kulkarni D. D.	II m	1907
Kulkarni M. B.	II m	1904
Kulkarni S. M.	L. M. E.	1891
Kumaren P. C.	L. M. E.	1902
Kurlekar B. T.	II m	1905
Kurup M. N. P.	L. M. E.	1902
Lagvankar H. S.	L. M. E.	1891
Lakdavala R. D.	L. M. E.	1897
Lalvani M. M.	L. M. E.	1903
Langrana D. F.	II m	1891
Langrana N. F.	L. M. E.	1891
Lantin J. R.	L. T. M.	1892
Laud S. A.	L. T. M.	1891
Lele G. E.	L. M. E.	1891
Lobo F. J.	L. M. E.	1899
Lohakhare B. G.	II m	1907
Lula G. G.	L. M. E.	1891
Madan D. P.	II m	1891
Madan D. R.	L. T. M.	1899
Mahesri N. D. P.	L. M. E.	1901
Malani V. H.	L. M. E.	1891
Mall M. G.	L. M. E.	1891
Madaviya K. V.	L. M. E.	1907
Manohar V. K.	L. M. E.	1901
Marashe A. B.	II m	1891
Marashe M. K.	L. M. E.	1905
Margoschis A.	II m	1900
Margoschis W	II m	1900
Marker N. N.	L. T. M.	1900
Maroof G. N.	P t	1907
Marshall N. M.	II m	1891
Martins A. J.	L. M. E.	1896
Mascarenhas D.	II m	1896
Massani F. P.	II m	1903
Master D. S.	L. M. E.	1891
Master H. J.	L. M. E.	1893
Mashews K. U.	L. M. E.	1903
Meer Lasq	II e	1907
Mehenti D. S.	L. T. M.	1892
Mehta B. N.	L. T. M.	1896
Mehta F. D.	II m	1906
Mehta G. D.	L. M. E.	1892
Mehta J. G.	L. T. M.	1898
Mehta M. N.	II m / L. M. E.	1904 / 1906
Mehta P. H.	L. M. E. / L. T. M.	1894 / 1896
Mehta P. N.	L. T. M.	1897
Mehta T. C.	II m	1905
Mehta T. M.	L. M. E.	1891
Mehta V. C.	L. M. E.	1891
Menon K. G.	L. M. E.	1905
Menon K. K.	L. M. E.	1903
Merchant P. N.	L. M. E / L. T. M.	1893 / 1895
Mewawala B. C.	II m	1902
Miranda V. F.	P t	1900
Mirchandani M. M.	II m	1906
Mishra V. B.	L. M. E.	1894
Misquitta A. G.	L. M. E.	1891
Mistri D. D.	L. M. E.	1891
Mistri D. P.	L. M. E.	1891
Mither M. L.	L. M. E.	1895
Moodliar A. R.	L. M. E.	1897
Moodliar A. T. M.	II m	1906
Moodliar R. S.	II m	1902
Moodliar T. D.	L. M. E.	1903
Moodliar V. K.	L. M. E.	1906
Moghe M. P.	L. T. M.	1907
Mohendra D.	L. M. E.	1901
Moos F. H.	L. M. E.	1895
Motafranina D. P.	II t	1891
Mudholkar N. R.	II m	1904
Mulla M. F.	II t	1903
Munshi K. M.	II m	1903
Munshi M. M.	L. M. E.	1902
Murti L. V.	II e	1907

Nabar N. M.	II m	1907
Nadkarni S. N.	II m	1905
Nagaokar D. A.	L. M. E.	1905
Nagpurkar P. P.	L. M. E.	1901
Naidu C. S. B.	L. T. M.	1902
Naidu M. A. R.	L. M. E.	1904
Naidu M. V.	II m	1907
Naidu P. V.	P m	1907
Naidu R. S.	L. M. E.	1891
Naigamwalla S. D.	L. T. M.	1894
Naik I. P.	L. M. E.	1891
Namjoshi N. M.	L. M. E.	1892
Nanji J. M.	II m	1906
Narayanappa G. L.	P e	1907
Natu V. D.	II m	1891
Navale V. N. B.	II m	1906
Navalkar S. R.	P t	1907
Navasariwala F. N.	L. T. M.	1893
	L. M. E.	1891
Nayak V. R.	II m	1907
Nerurkar K. D.	L. M. E.	1907
Nerurkar S. N.	II m	1907
Ogale G. P.	L. M. E.	1907
Oke V. B.	L. M. E.	1900
Oliaji J. B.	II t	1905
Padhye V. A.	L. M. E.	1905
Pais P. D.	P m	1906
Palkhiwala V. M.	L. T. M.	1891
Panday R. D.	L. M. E.	1891
Panse D. R.	L. M. E.	1902
Panvalkar N. D.	L. T. M.	1903
Paparam B. C.	L. E. E.	1907
Parady T. M.	L. M. E.	1895
	L. T. M.	1907
Paranjape V. N.	L. E. E.	1904
Paranjape V. V.	II m	1905
Parekh B. P.	L. M. E.	1891
Parekh Purshotam	L. T. M.	1898
Parekh R. B.	L. T. M.	1891
Parekh P. M.	L. T. M.	1901
Parelkar B. P.	II m	1903
Parshasarashi D. V.	II m	1903
Patankar R. R. V.	L. E. E.	1904
Patel B. D.	L. M. E.	1891
Patel E. C.	L. T. M.	1802
	II m	1894
Patel G. H.	L. M. E.	1893
Patel H. V.	L. M. E.	1891
Patel M. B.	L. M. E.	1891
Patel K. S.	II e	1905
Patel M. G.	II m	1906
Patel N. B.	II e	1906
Patel N. J.	II m	1907
Patel V. W.	L. M. E.	1891
Pathak D. B.	L. M. E.	1902
Pathak D. Y.	II m	1907
Pathak R. D.	II e	1905
Pathak R. N.	II m	1904
Pathak V. T.	L. T. M.	1901
Patel C. G.	L. M. E.	1896
Patil D. G.	II t	1907
Patil S. M.	L. M. E.	1902
Patwardhan A. P.	L. T. M.	1904
Patwardhan C. A.	II m	1902
Patwanhan K. N.	L. M. E.	1901
Patwardhan R. S.	II m	1902
Patwardhan V. G.	P m	1905
Pavgi B. M.	II m	1898
Pavri D. M.	II m	1903
Pawar S. B.	L. M. E.	1897
Pendse R. K.	L. T. M.	1904
Pereira J. M.	II m	1907
Phânse T. R.	L. M. E.	1897
	L. T. M.	1899
Pillay M. N. N.	II e	1907
Pillay N. K.	II e	1907
Pillay N. Kumaren	L. T. M.	1905
Pillay N. N.	L. T. M.	1901
Pillay N. P.	L. M. E.	1901
Pillay O. S. R.	II m	1907
Pillay P. S.	II e	1907
Pillay P. U.	II m	1906
Pillay R. N.	II m	1907
Pillay T. K. K.	II t	1903
Pillay T. K. P.	L. E. E.	1905
Pillay T. M.	L. E. E.	1905
Pillay T. M. K.	L. M. E.	1903
Pillay V. N. P.	L. M. E.	1902
Pitale P. S.	L. M. E.	1894
Pitale Y. A.	II m	1907
Pole N. G.	II m	1903
Porecha M. K.	L. M. E.	1891
Pradhan B. B.	L. E. E.	1907
Pradhan L. G.	L. T. M.	1901
Printer R. H.	II m	1891
Puntambekar M. V.	II e	1906
Puntambekar J. M.	L. E. E.	1905
Rabadina N. D.	II m	1905
Raizid P. B.	II t	1903
Rahotar P. D.	II m	1901
Raja N. G.	II m	1907
Ram Rao M. S.	II m	1905
Ranade B. B.	L. M. E.	1894
Ranade N. G.	L. M. E.	1891
	II t	1893
Ranadive V. S.	L. M. E.	1905
	II e	1907
Ranji S. M.	II m	1896

Rane N. M.	II m	1903
Rao K. S.	II t	1907
Rao M. P.	L. E. E.	1904
Rao P. V.	II t	1907
Raposo J. C.	L. E. E.	1905
Raval J. G.	L. M. E.	1891
Razzac S. A.	II e	1905
Rao M. G.	II m	1901
Rele G. R.	L. T. M.	1901
Rele S. R.	II e	1905
Rebello V.	II t	1905
Remedios L. D.	II m	1905
Rodrigues C. F.	L. M. E.	1905
Rodrigues J. E.	II e	1907
Routal B. B.	L. M. E.	1891
Row B. Karagiri	II m	1905
Row B. S.	II e	1907
Row M. G. K.	II m	1904
	II e	1905
Roy M.	L. E. E.	1907
Roy S. C.	L. M. E.	1906
Rozario M.	L. T. M.	1895
Sabnis G. D.	L. M. E.	1907
Sabnis S. D.	II m	1895
Safdarali S.	L. M. E.	1897
Saldanah F.	L. T. M.	1891
Sales J. F.	P m	1905
Sampson J. S.	II m	1903
Sane G. B.	L. M. E.	1897
Santoke M. K.	L. M. E.	1892
Sanyal S. S.	L. M. E.	1904
Sathe A. G.	II m	1907
Sauger S. P.	L. M. E.	1891
Sen A. C.	L. M. E.	1893
Sen B. C.	II e	1905
Seervai J. F.	L M. E.	1893
Seervai P. S.	P e	1905
Seervai P. S.	II m	1904
Setna A. R.	L. E. E.	1907
Setna H. A.	L. M. E.	1898
Setna R. H.	II m	1904
Shah C. K.	II m	1906
Shah D. C.	L. M. E.	1907
Shah Harakchand	II t	1897
Shah M. D.	II m	1901
	L. M. E.	1902
Shah T. S.	II m	1902
Shahchamnad R.	II m	1907
Shahapurker G. B.	II m	1907
Shalom J.	L. M. E.	1894
Shende N. C.	L. M. E.	1905
Shete S. G.	II m	1896
Sheth N. G.	L. T. M.	1901
Shevade V. L.	II e	1905
Shroff K. M.	L. M. E.	1891
Shroff M. N.	II m	1891
Shukla M. V.	L. M. E.	1893
Sibina J. V.	L. M. E.	1891
Smith G. F.	II m	1896
Sohani V. N.	L. M. E.	1891
Soni J. M.	L. M. E.	1891
Spencer J. B.	L. M. E.	1892
	II t	1895
Subramania K. M.	P m	1906
Sule M. D.	II m	1906
Suri P. S.	II m	1907
Surveyor R. R.	L. M. E.	1893
Takalkar D. V.	L. T. M.	1904
	II m	1907
Talcherkar V. A.	L. M. E.	1891
	L. T. M.	1893
Talegamkar B. M.	L. M. E.	1894
Talegamkar I. A.	L. T. M.	1891
Talim R. B.	L. T. M.	1901
Tambat M. B.	L. M. E.	1891
Tambat P. D.	L. M. E.	1896
Tamhankar N. V.	L. M. E.	1893
Tampi T. C.	L. M. E.	1903
Tembe G B.	L. M. E.	1891
Thaker G. D.	II t	1891
Thakur A. R.	L. M. E.	1891
Thanewala M. K.	L. M. E.	1891
Tika B. J.	L. M. E.	1902
Tilak V. K.	II m	1907
Tiwari B. P.	L. M. E.	1895
Treasurywalla M. J.	L. M. E.	1895
Trilokekar D. N.	L. M. E.	1891
Trivedi M. V.	II m	1906
Umrigar N. H.	P m	1906
Upadhya N. N.	L. T. M.	1891
Vadera G. C	L. M. E.	1905
Vaidya M. R.	L. T. M.	1891
Vaidya S. B.	L. M. E.	1893
Vaishnava K. R.	P t	1907
Vakil A. R.	L. M. E.	1903
Vania H. B.	II m	1904
Varma G. R.	P m	1906
Vasi R. M.	L. T. M.	1891
Vaz Joseph	L. T. M.	1899
Vaz J. J.	II m	1897
Vaz S. A.	II m	1897
Velinker S. S.	L. M. E.	1891
Verghese G.	L. M. E.	1903
Vernon J. V.	II t	1907
Vevai C. N.	L. M. E.	1891
Vidhwansa C. G.	L. T. M.	1903

Voravazir M. D.	L. M. E. 1900	Wadia R. D.	L. M. E. 1902
	L. T. M. 1902	Waghe P. G.	L. M. E. 1907
Vyas G. G.	L. T. M. 1901	Walker B.	II e 1905
	L. M. E. 1903	Wascar F. A.	L. M. E. 1900
Vyas J. V.	L. M. E. 1891	Watchmaker M. G.	L. M. E. 1895
		Waviker G. S.	II m 1903
Wacha S. E.	L. M. E. 1891		
Wadia D. D.	L. M. E. 1902	Yadav G. S.	L. M. E. 1900

RETURNS OF EMPLOYMENT PREPARED IN 1904.

Return of Employment of Former Cotton Students.

4	Engaged in business on their own account		Rs.	Rs.
6	Managers and Engineers of Mill, Gin Press, etc.	2 at	350	700
		1 ,,	250	250
		3 ,,	150	450
				1,400
2	Engineers in Mill	1 ,,	175	175
		1 ,,	150	150
				325
3	Assistant Managers of Mill, Gin Press, etc.	1 ,,	100	100
		2 have not stated pay.		
				100
4	Weaving Masters	2 at	250	500
		1 ,,	200	200
		1 ,,	80	80
				780
1	Spinning Master	1 ,,	160	160
				160
2	Carding Masters	1 ,,	85	
		1 ,,	115	200
				200
1	Assistant Weaving Master	1 ,,	125	
				125
1	Do. Spinning Master	1 ,,	130	
				130
1	Inspector of Boilers	1 ,,	135	
				135
4	Assistants in Commercial Houses... ...	1 ,,	335	
		1 ,,	250	
		1 ,,	175	
		1 ,,	150	
				910
4	Teachers in Technical and Industrial Schools...	1 ,,	60	
		1 ,,	75	
		1 ,,	150	
		1 has not stated salary.		
				285
17	Others employed in Mills, Ginning and other Factories and Workshops ...	3 at	50	150
		1 ,,	60	60
		5 ,,	75	375
		2 ,,	80	160
		1 ,,	100	100
		1 ,,	110	110
		1 ,,	125	125
				1,080
		3 have not stated salary		
	Of 50, 40 have stated their salaries, amounting to (Average Rs. 140.)		Rs.	5,630
	The following who had found employment previous to 1898-1899 have not reported progress :—			
1	Manager...			150
1	Carding Master had not stated salary.			
1	Assistant Spinning Master, salary not stated.			
1	Teacher in Technical School...			30
11	Others employed in Mills, Gin Presses, etc.,—			
		2 at Rs.	40 Rs.	80
		2 ,, ,,	50 ,,	100
		1 ,, ,,	80 ,,	80
		1 ,, ,,	100 ,,	100
		1 ,, ,,	125 ,,	125
		1 ,, ,,	150 ,,	150
				635
		3 had not stated salary.		
	Of 65 in all, 50 had stated their salary ... (Average Rs. 129.)		Total Rs.	6,445
2	died.			
5	reported themselves unemployed.			
21	have not replied to enquiry.			
93	Total passed out (93 less 2 died=91)			
	65 out of 91 or 71 per cent. are known to have found employment.			

Return of Employment of Former Engineering Students.

			Rs.
20 engaged in business on their own account.			
5 Managers and Engineers of Mills, Gin Factories, &c.	1	at Rs. 450 Rs. 450 ...	
	1	,, ,, 350 ,, 350 ...	
	1	,, ,, 250 ,, 250 ...	1,350
	2	,, ,, 150 ,, 300 ...	
2 Assistant Managers	1	,, ,, 130 ,, ...	240
	1	,, ,, 110 ,, 240 ...	
38 Engineers in Mills, Gin Presses, Factories, Work-Shops, &c.	1	,, ,, 75 ,, 75 ...	5,360
	2	,, ,, 80 ,, 160 ...	
	1	,, ,, 85 ,, 85 ...	
	1	,, ,, 90 ,, 90 ...	
	2	,, ,, 100 ,, 200 ...	
	2	,, ,, 120 ,, 240 ...	
	3	,, ,, 125 ,, 375 ...	
	10	,, ,, 150 ,, 1,500 ...	
	1	,, ,, 175 ,, 175 ...	
	1	,, ,, 180 ,, 180 ...	
	5	,, ,, 200 ,, 1,000 ...	
	1	,, ,, 270 ,, 270 ...	
	2	,, ,, 275 ,, 550 ...	
	1	,, ,, 400 ,, 400 ...	
	5	(have not stated salary).	
2 Assistant Engineers	1	at Rs. 80 Rs. 80 ...	80
	1	(has not stated salary) ...	
2 Assistant Superintendents of Workshops	1	at Rs. 50 Rs. 50 ...	50
	1	(has not stated salary) ...	
1 Electrical Engineer	1	at Rs. 280 Rs. 280 ...	280
1 Do. Operator	1	,, ,, 200 ,, 200 ...	200
1 Engineer on Steamer	1	,, ,, 140 ,, 140 ...	140
1 Inspector of Boilers	1	,, ,, 135 ,, 135 ...	135
2 Assistants in Commercial Houses.	1	,, ,, 250 ,, 250 ...	400
	1	,, ,, 150 ,, 150 ...	
22 Teachers in Technical and Industrial Schools.	2	,, ,, 50 ,, 100 ...	1,758
	1	,, ,, 60 ,, 60 ..	
	2	,, ,, 65 ,, 130 ...	
	1	,, ,, 70 ,, 70 ...	
	2	,, ,, 75 ,, 150 ...	
	4	,, ,, 80 ,, 320 ...	
	1	,, ,, 90 ,, 90 ...	
	1	,, ,, 100 ,, 100 ...	
	2	,, ,, 125 ,, 250 ...	
	1	,, ,, 138 ,, 138 ...	
	2	,, ,, 175 ,, 350 ...	
	3	(not stated salary) ...	
30 others as Assistants, Fitters, &c., in Workshops, &c.	1	at Rs. 40 Rs. 40 ..	610
	1	,, ,, 50 ,, 50 ...	
	1	,, ,, 60 ,, 60 ...	
	1	,, ,, 80 ,, 80 ...	
	2	,, ,, 90 ,, 180 ...	
	2	,, ,, 100 ,, 200 ...	
		Carried over Rs.	10,803

		Brought over Rs.	10,803
30 others as Assistant Fitters, &c., in Workshops, &c.— continued.	1 at Rs. 125 Rs. 125 ... 18 (not stated salary) ...		125
123	79 have stated their salaries amounting to Rs. ...		10,928
	(Average Rs. 138.)		

The following who had found employment previous to 1898-99 have not reported progress :—

3 Engineers and Managers ...	1 at Rs. 85 Rs. 85 ... 1 „ „ 150 „ 150 ... 1 (not stated salary) ...		235
27 Engineers in Mills, Gins, Workshops, &c.	1 at Rs. 40 Rs. 40 ... 3 „ „ 50 „ 150 ... 3 „ „ 60 „ 180 ... 2 „ „ 75 „ 150 ... 3 „ „ 80 „ 240 ... 1 „ „ 90 „ 90 ... 4 „ „ 100 „ 400 ... 1 „ „ 125 „ 125 ... 2 „ „ 150 „ 300 ... 7 (not stated salary) ...		1,675
2 Assistant Engineers	1 at Rs. 75 Rs. 75 ... 1 „ „ 100 „ 100 ...		175
2 Assistant Superintendents, Workshops.	1 „ „ 90 „ 90 ... 1 „ „ 200 „ 200 ...		290
4 Assistants in Commercial Houses.	1 „ „ 40 „ 40 ... 3 (not stated salary) ...		40
25 Mechanics in Mills, Gin Presses, Workshops, &c.	1 at Rs. 25 Rs. 25 ... 6 „ „ 60 „ 360 ... 2 „ „ 35 „ 70 ... 3 „ „ 40 „ 120 ... 2 „ „ 50 „ 100 ... 1 „ „ 60 „ 60 ... 1 „ „ 65 „ 65 ... 2 „ „ 75 „ 150 ... 1 „ „ 85 „ 85 ... 6 (not stated salary) ...		1,635
190	125 have stated salaries amounting to ... ... Rs....		14,378
	(Average Rs. 115.)		

8 died.

10 reported themselves unemployed.

85 have not replied to enquiry.

289 Total passed out (289 less 8 died=281) 190 out of 281 or68 per cent. are known to have found employment.

Summary of Results of Returns of Employment according to Nationalities.

Nationalities.	Total Passes.	Died.	To Account for.	In Business.	Pay Stated by.	Pay not Stated.	Total Employed.	Per cent Employed.	Average Pay.	Lowest Pay.	Highest Pay.	Per cent to Pass.	Not Replied, &c.
									Rs.	Rs.	Rs.		
Guzerati Hindus	72	3	65	2	37	13	52	84	122	25	400	20	17
Coccani Hindus	138	5	133	6	54	18	78	60	105	25	350	35	55
Northern India Hindus	8	...	8	...	3	3	6	80	93	40	150	2	2
Southern do	13	..	13	...	6	2	8	61	76	40	125	3	5
Total all Hindus	231	8	233	8	100	36	144	70	100	25	400	60	79
Portuguese	43	...	43	2	23	3	28	60	110	40	180	11	15
Europeans	9	1	8	...	5	3	8	100	183	150	250	2	...
Jews	4	...	4	...	3	1	4	100	100	50	150	1	...
Mahomedans	3	...	3	1	2	...	3	100	100	75	125	1	...
Parsis	92	1	91	13	42	13	68	72	144	30	450	25	23
Total ...	382	10	372	24	175	56	255	69	119	25	450	100	117

APPENDIX No. 5.

EXAMINATION RULES UNDER THE BOMBAY BOILER ACT

AND

RULES, etc., REGARDING THE STATE TECHNICAL SCHOLARSHIPS.

Admission of Candidates to the Examinations for Certificates of Competency.

39. (1) Candidates at examinations for certificates of competency shall pay fees at the following rates, namely :—

	Rs.
For a first class certificate ...	20
Do. second do. do. ...	15
Do. third do. do. ...	10

40. (1) Every applicant for examination must make an application in the (prescribed) form.

(2) He shall duly fill in all parts of the said form which are to be filled in by a candidate and sign the same in the presence of the Collector, an Assistant Collector or a Magistrate, who shall append his signature in token of attestation.

(3) The applicant shall then lodge his application at the office of the Collector not later than fifteen days before the date fixed for the examination, together with—

(a) all testimonials of good character, sobriety, experience and ability, together with copies of the same ;

(b) any other papers required by these rules or the printed form of application ;

(c) a receipt from a Government treasury situated in the Bombay Presidency for the amount of the fee prescribed in rule 39, sub-rule (1), for the examination at which he wishes to appear ;

(d) a letter declaring in what language he desires to be examined ; and

(e) all previous certificates issued to the applicant under the Act.

41. Candidates for certificates of competency who are natives of India must prove to the satisfaction of the Examiners that they can read their vernacular sufficiently well to perform the duties required of them.

Testimonials.

43. No applicant shall be admitted to examination whose testimonials as to sobriety, experience and ability do not relate to a period of six months or more of the twelve months immediately preceding the date of the application and are not, in the opinion of the Board, trustworthy and satisfactory:

Provided that an applicant whose testimonials have been accepted as satisfactory under this rule at one examination, but who has for other reasons failed to pass, may, at the discretion of the Examiners, be permitted to appear on the same testimonials at the next succeeding examination.

Age and Training of Candidates.

48. A candidate for a third class certificate of competency shall not be admitted to examination unless he

(*a*) is qualified within the meaning of the rules next following as a candidate for a second class engineer's certificate of competency, or

(*b*) proves to the satisfaction of the Board that previous to his application he has been three years employed as a fireman on engines and boilers, or

(*c*) produces from the Principal of the College of Science at Poona, or from the Principal of the Victoria Jubilee Technical Institute at Bombay, or from the Principal of the Kala Bhavan at Baroda, or from the Superintendent, Fardunji Parekh School of Art, Surat, a certificate stating that he has completed a full three years' course in the

workshops of such one of the said institutions as is under the control of the Principal or Superintendent granting the certificate, and during that period has been constantly instructed in the management of engines and boilers.

49. (1) A candidate for a second class engineer's certificate of competency must be twenty-one years of age.

(2) No candidate for a certificate of this class will be admitted to the examination, unless he

(*a*) proves to the satisfaction of the Board that, previous to his application,—

(i) he has served an apprenticeship for not less than three years to an Engineer, devoting his whole time to the work of an apprentice and not being simultaneously employed on other duties unconnected with the profession of Engineering, and that during that time he has been employed on the making and repairing of engines ;

(ii) he has been employed for not less than three years as a journeyman mechanic in some factory or workshop on the making or repairing of engines ; or

(iii) he has for not lesss than two years fulfilled the requirements either of clause (i) or of clause (ii) as to service or employment, and has, for not less than one year in addition thereto, served as engineer in charge or assistant engineer in some mill or factory with boilers under steam ; or

(*b*) produces from the Principal of the College of Science at Poona, or from the Principal of the Victoria Jubilee Technical Institute at Bombay, or from the Principal of Kala Bhavan at Baroda, or from the Superintendent, Fardunji Parekh School of Art, Surat, a certificate stating that he has completed a full three years' course in the workshops of such one of the said institutions as is under the control of the Principal or Superintendent granting the certificate, and during that period has been constantly

instructed in the management of boilers and engines: and also produces, in addition to a certificate from such one of the said institutions, a certificate or certificates showing that for a period of not less than one year he has obtained practical experience in either of the ways laid down in sub-clauses (i) and (ii) of clause (*a*) of this sub-rule.

50. (1) A candidate for a first class engineer's certificate of competency must be twenty-two years of age.

(2) No candidate for a certificate of this class will be admitted to the examination unless he proves to the satisfaction of the Board that, previous to his application,—

(1) he has received such training as is required by rule 49 in the case of a candidate for a second class engineer's certificate of competency; and

(2) either

(*a*) he possesses or is entitled to a first class engineer's certificate of service; or,

if he neither possesses nor he is entitled to a first class certificate of service,

(*b*) that he has served—

(i) for at least one year with boilers under steam as engineer with a second class engineer's certificate of competency or

(ii) for at least two years with boilers under steam as engineer with a second class engineer's certificate of service, or

(iii) for at least one year with boilers under steam as second engineer with a second class engineer's certificate of service, and, in addition, for at least six months as chief engineer with boilers under steam which are by law required to be in the charge of an engineer holding a certificate:

Subjects of Examination for Certificates of Competency.

56. To be entitled to a third class certificate of competency a candidate must satisfy the Examiners that—

(*a*) he fully understands the working and management of boilers, the use of the best means of firing for the prevention of smoke, and the separate use of gauge glass-cocks, blow-off cocks, scum-cocks and other appliances;

(*b*) he is able to some extent to explain the actual working of engines, and the separate uses of feed-pumps, slide-valves, pistons and other appliances; and

(*c*) he is able to show how he would act in case of the break-down of any portion of the machinery, etc.

57. To be entitled to a second class certificate of competency a candidate—

(*a*) must give a description of boilers, and the methods of staying them, together with the use and management of the different valves, cocks, pipes and connections;

(*b*) must understand how to correct defects from accident, decay and other causes, and know the means of repairing such defects;

(*c*) must understand the use of the barometer, thermometer and salinometer, and the principles on which they are constructed;

(*d*) must know the causes, effects and usual remedies for incrustation and corrosion;

(*e*) must state how a temporary or permanent repair could be effected in case of derangement of a part of the machinery or of total break-down;

(*f*) must write a legible hand and understand the first five rules of arithmetic, and decimals, and their application to questions about consumption of stores, full capacities of tanks, the duty of pumps, and the direct strains in engines and boilers;

(*g*) must pass a creditable examination as to the various constructions of engines in general use and as to the different working parts, external and internal, and the use of each part; and

(*h*) must possess a creditable knowledge of the promiment facts relating to combustion, heat and steam.

58. To be entitled to a first class certificate of competency a candidate must be able to—

(*a*) make an intelligible hand-sketch or a working drawing of some one or more of the principal parts of a steam-engine; and to mark in, without a copy, all the necessary dimensions in figures, so that the sketch or drawing could be worked from;

(*b*) take of and calculate indicator diagrams;

(*c*) calculate safety-valve pressures, and the strength of the boiler shell, stays and riveting;

(*d*) state the general proportions borne by the principal parts of the machinery to each other, and calculate the direct stress, the torsional stress and the bending stress, in round bars, and the direct stress and the bending stress in rectangular bars with given loads;

(*e*) explain the method of testing and altering the setting of the slide-valves, and sketch about what difference any alteration in the slide-valve will make in the indicator diagram, and also explain the method of testing the fairness of shafts, and of adjusting them;

(*f*) explain surface condensation, super-heating and the working of steam expansively; and

(*g*) work calculations including the mensuration of superficies and solids and the extraction of the square root, and the application of these rules to questions relating to the power, duty and economy of engines and boilers, and to the stresses in rods, shafts and levers of the engine.

Capabilities of Holders of Certificates.

77. (1) Holders of certificates of the first class will be deemed to be capable, as first class engineers, of having charge of boilers attached to prime-movers of any horse-power.

(2) Holders of certificates of the second class will be deemed to be capable, as second class engineers, of having charge of boilers attached to prime-movers not exceeding sixty horse-power nominal.

(3) Holders of certificates of the third class will be deemed to be capable, as third class engineers, of having charge of boilers attached to prime-movers not exceeding twenty horse-power nominal.

Re STATE TECHNICAL SCHOLARSHIPS.

Notification.

EDUCATIONAL DEPARTMENT.

No. 264 OF 1908.

Bombay Castle, 11th February, 1908.

APPLICATIONS are invited for one or two STATE TECHNICAL SCHOLARSHIPS from candidates in the Bombay Presidency who are willing to go to England to undergo a special course of study in—

(1) The processes of Bleaching, Dyeing, and Printing in mills.

(2) Electrical and Mechanical Engineering.

2. Each scholarship is of the value of £150 a year and is tenable for two years. On good cause being shown a scholarship may be continued for a third year.

3. Besides the stipend mentioned above, a selected scholar will receive a second class passage to England and a similar return passage to India, if he has duly complied with the regulation under which he holds the scholarship. He will also receive travelling allowance for *bona fide* journeys made in connection with his studies and approved by the head of the institution in which he is studying while in Europe. University or College fees will also be paid by Government.

4. Candidates for either of the above scholarships must state in their applications in what institutions they propose to study and what course of instruction they propose to attend.

5. Candidates for the first scholarship must have passed through and obtained the diploma of the full textile course of the Victoria Jubilee Technical Institute, and must have subsequently been engaged in a mill or factory for not less than two years immediately preceding the date of their application. Applications must be accompanied by the necessary certificates signed by the Principal, Victoria Jubilee Technical Institute, and by managers of mills or factories. Except for very special reasons applications from candidates over 30 years of age will not be considered.

Candidates for the second scholarship must produce a certificate either from the Principal, College of Science, Poona, or from the Principal, Victoria Jubilee Technical Institute, Bombay, that they are fitted to go through an advance course of training in Electrical and Mechanical Engineering. For this scholarship preference will be given to candidates who are under 25 years of age..

6. A candidate's application must be accompanied by evidence showing that he is a *bona fide* native of the Bombay Presidency, that he is a man of good character, intelligent and industrious, and what is his extact age on the date of application. He should also submit evidence that he is in good health and of good physique.

7. Selected candidates will be required to arrive in England by the middle of September. They will, while in England, be subject to the rules, printed on the next page, so far as they are applicable, laid down by the Secretary of State for India, for the guidance of the Government of India Technical Scholars, and to such further regulations as may from time to time be made for their guidance by the Secretary of State.

8. Applications will be received by the Director of Public Instruction up to the 15th March, and they must be complete as regards all the conditions above defined.

9. After the selection of the scholar or scholars has been made, his name or their names will be notified in the "Bombay Government Gazette," and he or they will then receive such further instructions as may appear to Government to be necessary.

By order of his Excellency the Honourable the Governor in Council.

R. E. ENTHOVEN,
Acting Secretary to Government.

Rules for Indian Government Technical Scholars in England.

1. Every scholar shall, on reaching England, at once present himself to the Secretary, Judicial and Public Department, at the India Office, and report his arrival in writing.

2. Every scholar shall, without any unnecessary delay, inform the Secretary of State to which University or College he is about to proceed, and shall at once take steps to enter himself thereat.

3. Every scholar shall, within four weeks of reaching England, submit for the approval of the Secretary of State a statement showing the general course of study he proposes to follow; and the course approved shall not be changed without the sanction of the Secretary of State.

4. Every scholar must give a written undertaking that he will devote himself exclusively, during the tenure of his Scholarship, to the study of the subject for which his scholarship was granted, and that he will return to India on its termination, and there continue to devote himself to the industry which he has studied. Any scholar who neglects his studies, or tries to work for any other profession concurrently, will render himself liable to forfeiture of his scholarship.

5. Every scholar will be required to keep a concise daily diary to be certified by the authority under whom he is working, and to be submitted at the end of each term through that authority to the Secretary of State for transmission to India. He must also submit, in the same way, from time to time, full notes of the work on which he is employed.

6. Scholars will be excepted to continue their studies during the summer vacations of the institutions where they are working, with the exception of three weeks in each year. Vacation study should, when possible, take the form of practical work.

7. Every scholar shall, at the end of each term of residence at a University or College, submit to the Secretary of State a certificate from the proper University or College authority, showing that his residence, conduct and progress in study have been satisfactory during the term.

8. Subject to a due compliance with the above conditions the allowance, at the rate of £150 a year for two years, or three years, if so determined, will be paid quarterly, in advance, by the India Office, commencing from the date of the scholar's reporting his arrival in England; but this allowance shall be reduced by the amount of any other sum which may become payable to him out of the revenues of India in respect of residence at a University or College during the same period, or any part of it, but not in respect of University or College fees, the cost of which will be separately defrayed by the Secretary of State.

9. The necessary travelling expenses of scholars, by second class, or by third class, if no second class be available, will also be separately defrayed by the Secretary of State; these should be claimed on forms obtainable from the Accountant-General, India Office, S. W.

Charges for hotel bills are not defrayed.

10. Every scholar will forfeit his scholarship who, not being disabled by illness or prevented by any other cause which the Secretary of State may consider sufficient, fails to complete the required term of residence in England according to the terms and conditions approved by the Secretary of State under Rule 3 or who is guilty of misconduct or disregard of the orders of the Secretary of State. If a scholarship be forfeited, the scholar will lose his claim to a free return passage to India, and will further become liable to refund the cost of his free passage to England.

11. All the scholars will be under the special supervision and charge of the Political Aide-de-Camp to the Secretary of State; through whom the necessary orders will be given, and to whom all reports and other communications respecting them should be sent.

Ramkrishna M. Chonkar,
Assistant Secretary
and
Superintendent of Examinations.

Supplement to the Record

OF

TWENTY YEARS' PROGRESS

OF THE

Victoria Jubilee Technical Institute.

1907-08—1912-13.

Supplement to the Twenty Years' Record

OF THE

Progress of the Victoria Jubilee Technical Institute 1907-8—1912-13.

Courses of Instruction.

AT the conclusion of the Twenty Years' Record reference was made to the desirability of the revision of the Courses of Instruction. The subject was carefully considered by a Sub-Committee consisting of the Chairman, Mr. Dunn, the Hon. Mr. Setalwad, Sir Bhalchandra Krishna, Mr. Bomanji Petit, Mr. Wacha, Mr. Burns, Mr. Wallace and the Honorary Secretary Mr. Moos. The Committee recommended the extension of the courses from 3 to 4 years with a view to increasing their efficiency and supplying certain obvious omissions from the curriculum. Six months of the last year were to be spent under supervision on practical work in an outside mill or factory. The textile course was split into Spinning 2 years and Weaving 2 years.

Examinations.

Incidently the question of Examinations and Certificates was also considered and it was decided to award an Honours Diploma to the First Class men, *i.e.*, those who obtained 66 per cent. marks and an ordinary Diploma to those who gained 50 per cent. of the total marks obtainable. The Assistant Secretary Mr. Ramkrishna M. Chonkar was appointed Superintendent of Examinations.

In another direction the scope of work of the Institute was also extended. Motor Cars were being rapidly introduced into the country and the want was seriously felt of competent drivers and motor car mechanics. Government suggested the establishment of a Motor Car section at the Institute offering to bear a large portion of the initial cost. Accordingly a new department in a separate building erected for the purpose at a cost of about Rs. 3,000 was established for instructing students in the mechanism, repairs and driving of motor cars. Government paid the initial cost of Rs. 7,000 of the cars, accessories, etc., and a start was made in September 1907 with 40 students in the Day Classes, while a course of evening lectures and afternoon practical demonstrations was carried out for gentlemen owners of cars who desired to know something of the mechanism and driving of their machines. As a help in the practical instruction of students repairs to cars from the public were undertaken and the section was fully at work by the end of the year (1907).

Motor-Car Machines.

An important constitutional question was at this time raised by the Director of Public Instruction. In connection with the appointment of Principal which had been advertised, the Board was asked to state whether in their opinion there was any objection to making the Principal a member and Ex-officio Secretary of the Board. The question was considered at a special meeting and the proposition that in the opinion of the Trustees it is desirable that the Principal should be a member and Ex-officio Secretary of the Board was negatived.

Position of Principal.

Mr. T. S. Dawson, the Acting Principal, was appointed Principal at a salary of Rs. 1,000 per mensem on the understanding that it would be increased to Rs. 1,250 as finances may permit.

Mr. Dawson appointed Principal.

Resignation of Mr. Moos.

Six months later Mr. Moos resigned the office of Honorary Secretary. His resignation was accepted with regret and the Board placed on record their high appreciation of the very valuable services rendered to the Institute by him as its Honorary Secretary for 8 years. Mr. Dinsha Edulji Wacha was appointed Honorary Secretary (25th June 1908).

Mr. Baker appointed.

Mr. Hugo, the Vice-Principal and Head of the Electrical Department, went on leave. His work as Head of the Electrical Department was divided up between Mr. Wilson of the P. W. D. and Mr. A. B. Darukhanavala. Mr. Hugo did not return and Mr. P. M. Baker, B. Sc. (Lond.), was eventually appointed to the post (1909), the office of Vice-Principal being allowed to remain vacant.

Mr. Pomfret appointed.

The Textile School which had been developed so as to include plain and fancy weaving, sizing, bleaching, etc., was without a fully qualified gentleman as Head of the Department. Mr. W. T. Pomfret, a teacher of large experience in Lancashire, was selected for the post. He took over charge in September 1908.

Mr. Turner appointed.

With a view to secure full efficiency the new department of Technical Chemistry was placed under a fully qualified gentleman, Mr. A. J. Turner, B.Sc. (Lond.), F.I.C. Mr. Turner arrived about the same time as Mr. Pomfret.

Increase in Govt. Grant.

The efforts of the Board in raising the standard of instruction by providing higher paid Heads of Departments and Head Assistants received practical recognition from Government who raised their annual grant permanently to Rs. 45,000.

Municipal grant increased.

The Honorary Secretary was able to secure an increase of the Municipal grant from Rs. 15,000 to Rs. 18,000 in 1909. In the following year it was increased to Rs. 20,000.

Mr. Dunn resigned.

Soon after Mr. Dunn retired from the office of Chairman which he had held for 5 years. From the time he assumed charge of his responsible office he had with commendable zeal, energy and tact striven to raise the Institute to a higher level than before and the Board were pleased to record that his efforts were crowned with success; the Institute being recognised as the best of its kind in the country.

Boiler Act Examination rules.

Mr. F. L. Sprott was appointed Chairman in succession to Mr. Dunn in June 1909. The question of the position of the Mechanical Engineering students at the Boiler Act Examination had been pending for some considerable time. The Chairman was requested to personally represent the case to Government. He was able to secure for the students admission to the 2nd Class Engineer's Examination without the 12 months' outside practice which was demanded for some years past.

Government recognition of work.

In another direction the work and status of the Institute now received recognition at the hands of Government. The Principal was asked to serve on the Government Text Book Committee; and the Head of the Textile Department was asked to inspect and examine the Weaving Schools of the Presidency during the cold weather each year for Government. In the following year (1911) Government invited the Board to permit the Principal (Mr. Dawson) to help in the deliberations of a Conference of Directors of Public Instruction held at Allahabad and presi-

ded over by the Hon. Mr. (now Sir) W. H. Butler, Member for Education of the Viceroy's Council. At the request of Mr. Dawson, the Assistant Secretary, Mr. Ramkrishna M. Chonkar, was permitted also to attend the Conference.

Allahabad Conference.

At the second day's sitting of the Conference, which was held on Tuesday, 14th February 1911, the draft resolution was discussed which the Hon. Rao Bahadur R. N. Mudholkar had proposed to move in the Imperial Council. A note dealing with the subject matter of the resolution was submitted to the Conference by Mr. Dawson. It dealt also with the question of developing Technical education in the Bombay Presidency. As subsequent events have proved this note and the visit to Allahabad was productive of much good to the Institute. Its premier position in the department of Technical education was vividly impressed in the highest quarters more than at any previous time; the sympathy and support of the Government of India to its development were ensured. Incidently the popularity of the Institute received additional strength.

Developments Committee.

On his return from the Conference the Principal, Mr. Dawson, presented to the Board a report of his visit in which he invited the particular attention of the Board to the question of developing the Institute on the lines suggested in his note. A Committee consisting of the Chairman, Mr. Moos, Mr. Murzban, Mr. Wallace and the Honorary Secretary was appointed to go into the question. The Committee reported favourably on the proposals of the Principal; and a second Committee consisting of the Chairman, the Hon. Sir P. M. Mehta, Mr. P. R. Cadell, Mr. Moos, and the Honorary Secretary was formed to draw up a detailed scheme for submission to Government.

The preparation of the detailed scheme had, however, to be deferred owing to the absence on leave of the Chairman for six months.

Presents, &c.

In the meanwhile the interest created in the Institute and its work received some consideration, stimulus by presents of machinery from several firms of manufacturers and by the announcement that Government intended to make large non-recurring grants to Technical education.

Return of the Chairman and the scheme of development.

On the return of the Chairman the question of development was vigorously taken up. The draft scheme was laid before the Board and was generally approved by the Trustees at their meeting held on the 15th February 1912. During the interval which elapsed between the return of the Chairman from leave in November 1911 and the submission of the scheme to Government in February 1912, some very important matters which had been allowed to stand over owing to the absence of the Chairman, were pushed forward.

Handloom Weaving.

At the instance of Government a new department was opened for instruction in Handloom Weaving—an industry which it was desired to revive. Government handsomely provided the initial expenditure (Rs. 7,500) for the necessary buildings and equipment and a recurring grant of Rs. 2,000 per annum for the maintenance of the section. The class derives its students from amongst *bona fide* weavers employed in the industry and sent up by Collector and District Municipalities, who pay stipends to the scholars while at the Institute.

New Workshop Building.

The G. I. P. Railway had agreed to pay Rs. 35,000 for a portion of the land they required from the North-West of the Institute to compensate for the loss and damage of portions of the Mechanical Engi-

VISIT OF THE RT. HON. LORD CREWE.

neering Workshops which stood on the land under acquisition. The erection of the new Workshops designed by the Principal were undertaken.

Mr. Dawson on the Government of India Committee.

The Government of India had appointed a Committee to inquire into the extent of the employment obtained by students trained in the Technical Schools of the country and how far a greater scope might be effected. At its request the services of the Principal, Mr. Dawson, were placed at the disposal of Government from January to June 1912. Mr. Pomfret, the Head of the Textile Department, being appointed to act as Principal.

Visit of Lord Crewe.

To this short period also belongs the visit of the Rt. Hon. Lord Crewe, which was paid on the morning of the 4th December 1911. The Secretary of State for India who was accompanied by H. E. the Governor, Lord Sydenham, was received and shown over the Institute by the Chairman, the Honorary Secretary and the Principal and expressed himself much interested in what he saw. The visit was illustrative of the keener interest in Technical education by the Government, the first fruit of which was visible in the announcement of a grant from the Government of India of Rs. 50,000 for additional equipment, &c., and a special non-recurring grant of Rs. 2,00,000 for the development of the Institute on lines to be approved by Government of Bombay, who had been pleased to sanction a recurring grant of Rs. 10,000 towards the increased cost of maintenance of the Institute.

Sir Richard Lamb on the work of the Institute.

At the Distribution of Prizes which was held soon after the Hon. Sir Richard Lamb referred to the opinion of the Hon. Mr. Morrison and H. E. the Governor that the V. J. T. Institute is now a ....ll ....pped up-to-date Technical

Institute as good probably as the average Technical Institute in England, and proceeded to observe that it appears to be the only really efficient Institute of the kind in India. The time seems to have come when after nearly 25 years of successful work on two of the three objects of the Association it is necessary to give close and careful consideration to the remaining object which may be said to be co-ordination under a central institute of all the work which is being done in the Presidency in Technical education.

Report on the Scheme by Government Committee.

Later the Scheme submitted by the Board was referred by Government (G. R. No. 2687, dated 19th October 1912) for report to a Committee consisting of—

Mr. F. L. Sprott, Chairman of the Board of the V. J. T. I.,

The Director of Public Instruction,

The Principal of the V. J. T. Institute,

The Hon. Sir P. M. Mehta, K.C.I.E.,

The Principal, College of Engineering, Poona, and

The Secretary to Government, Education Department.

The whole subject was carefully discussed at several sittings and the exhaustive report drawn up by the Chairman was duly approved and forwarded to Government on the 29th January 1913. The conclusions of the Committee and its recommendations were unanimously approved by the Board of the Institute at its meeting held on the 27th February 1913, a few days before the A.... I Di bution of Prizes which was held on the 5th March 1913 and at which H. E. the Governor, Lord Sydenham, presided.

Lord Sydenham on the work of the Institute.

His Excellency complimented the Institute on its success and announced the intention of Government to assist liberally in its development into the Central Technological Institute of the Presidency. The official acceptance of the conclusions and recommendations in the Committee's report followed in June 1913. The G. R. No. 1850 declaring the views and intentions of Government was issued on the 27th June 1913 just about the time when the Trustees were looking forward to celebrating the 25th Anniversary of the opening of the classes in September 1888. The labours of years were crowned with success. On the eve of the 25th Anniversary of the commencement of its work the Institute was declared to be the Central Technological Institute to which the rest of the Technical and Industrial Schools of the Presidency were to look for advice and guidance.

V. J. T. I., the Central Institute.

Conclusion.

During the 25 years over 5,000 young men joined the Institute of whom about 1,300 were able to complete their courses of instruction; of these 979 passed the final examinations obtaining the Full Technological Certificates. In the earlier years several joined who were physically unfit to follow the course of instruction; others entered under the impression that a course of Technical education would in itself fit themselves for employment as engineers, carding or spinning masters or even as managers. There were several others who did not find the work congenial and the examinations easy. Others, again, were there who found the cost of instruction higher than they could afford. The view of the authorities has been that they are responsible more for the quality than for the quantity of output. They have steadily refused to allow them to be turned out who were found to be physically or

educationally on a lower plane than that demanded by employers of labour. It might be interesting to record that in recent years the percentage of students completing their course has been considerably higher than that in previous years. During the last quinquenium, 1907-1912, the admissions numbered 600, the examinees 450 and the passes 380. There is reason to believe that most of the passed students have obtained suitable employments despite their adverse circumstances.

Passed Students.

A number of these have passed the Second Class Boiler Act Examinations and there are several who hold the First Class Certificates under the Act. The Institute has provided Teachers and Superintendents for most of the Technical and Industrial Schools of the country and it may be interesting to note that for some years past those who have held the post of First Assistant in the Institute itself have been passed students. There are some young men trained in the Institute who carry on their own professions or trades. A few of the older students have distinguished themselves in the department of original work. A few others have written useful books in the Vernacular or Engineering and Mill work. Instances are available of students who have been successfully employed not long after leaving the Institute on erection work and even in the Marine Department. Obviously it is impossible to keep in sight all the students who leave and obtain employment but the representative record above given will suffice to show that the Institute can well claim to have been successful.

Courses of Instruction.

The start was made with only two branches of Technology, *viz.*, Mechanical Engineering and Cotton Spinning. The instructions at present includes besides the above two, Weaving, Dyeing,

Bleaching, Sizing, Electrical Engineering including Telegraphy and Telephony, Motor Mechanics, Handloom Weaving, Chemistry of Oils, Fats, Colours, Machine Designs, Gas Producer, &c. The equipment which at the commencement was represented by an outlay of about Rs. 80,000 has been continually added to and now stands at over Rs. 3,10,000 or nearly four times what it was at the opening. On the extensions and additions to the Building accommodation and the construction of hostel for students, the Board have spent over Rs. 2,00,000 since the establishment of the Institute 25 years ago. The annual revenue and expenditure which at the beginning aggregated to Rs. 60,000 has risen to about Rs. 1,20,000.* The endowments of scholarships, prizes, etc., which at the beginning totalled to Rs. 42,000 now stand at Rs. 82,000.

Financial.

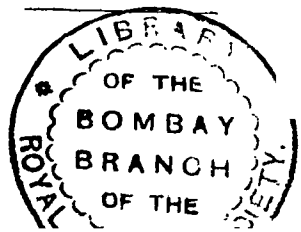
There has been of necessity a considerable increase in the staff and provision has been made for training a certain number of successful students as Teachers. Discipline on the part of the staff and students had been maintained at a high standard while no little attention has been paid even to the comfort and convenience of the students without in any way affecting the arrangements for a high class training. As proof of the quality of instruction imparted at the Institute reference may be made to the results obtained at the City and Guilds of London Institute Examinations. The percentage of passes there has been in the cases of Institute trained men nearly twice as much as that in the other candidates. The only Bronze Medal ever taken out of Great Britain for success at these examinations was secured by a Textile [illegible] Institute.

Staff.

City & Guilds Examinations.

* The salaries of staff have risen from Rs. 43,000 to Rs. 93,000.

It is possible under other and more encouraging circumstances the Institute might have produced a better record, but as things have been it can look back upon the years that have passed with no small feeling of pride and satisfaction at what has been accomplished. It is true much remains to be done. The field for useful development is still wide. During the 25 years with which this record deals the premier position of the Institute in the department of Technical education has been successfully established and maintained, thanks to the practical expression of cordial sympathy and support from all quarters, particularly Government, the Bombay Municipality and the Millowners' Association, and it is earnestly to be hoped that these conditions will long continue to the undoubted benefit of the new Central Technological Institute of the Presidency and of Technical education in general upon the advancement of which depends the material prosperity of the country.



Appendix I.

Statement showing Diplomas and Full Technological Certificates granted up to 1912.

Licentiates of Mechanical Engineering	...	311
Second Class, Full Tech. in Mech. Eng.	...	257
Third Class, ,, ,,	...	35
Licentiate of Textile Manufacture ...	...	117
Second Class, Full Tech. in Tex. Maf.	...	67
Third Class, ,, ,,	...	8
Licentiate in Electrical Engineering ...	...	52
Second Class, Full Tech. in Elec. Eng.	...	81
Third Class, ,, ,,	...	23
Licentiate in Technical Chemistry ...	...	2
Second Class, Full Tech. in Tech. Chem.	...	5
Third Class, ,, ,,	...	2
Total	...	979

Appendix II.

Victoria Jubilee Technical Institute.

FINANCIAL POSITION.

Item.	1890.	1900.	1910.	1913.
	Rs.	Rs.	Rs.	Rs.
RECEIPTS.				
Endowment, etc., Funds ...	6,49,000	7,18,000	8,37,000	9,53,000
Scholarships, etc., Funds ...	42,000	73,200	81,400	82,400
Grants-in-aid	42,000	43,000	65,500	84,500
Fees, Rents, Interest, etc. ...	23,000	18,000	34,500	34,000
Scholarships Interest	2,500	5,000	6,000	6,100
Accumulated Balances	40,000	77,000	77,000	40,000
Total ...	7,98,500	9,34,200	11,01,400	12,00,000
EXPENDITURE.				
Buildings	3,29,000	3,45,000	5,15,000	5,40,000
Plant Machinery...	83,000	1,36,000	2,30,000	3,12,000
Salaries of Staff	43,000	46,000	82,000	93,000
Stores and Contingencies ...	5,000	9,000	15,000	18,000
General Charges	5,000	6,500	9,000	8,400
Repairs	1,000	3,500	12,300	14,500
Scholarships, etc., paid ...	1,500	2,200	2,600	2,600
Investments and Cash ...	3,31,000	3,86,000	2,35,500	2,11,500
Total ...	7,98,500	9,34,200	11,01,400	12,00,000

The Times Press, Bombay—3904·13

00081290

Digitized with financial assistance from
Observer Research Foundation
on 17 May, 2019